



BAY AREA  
AIR QUALITY  
MANAGEMENT  
DISTRICT

## **STAFF REPORT JUNE 2005**

### **Proposed Adoption of:**

Regulation 2: Permits,

Rule 5: New Source Review of Toxic Air Contaminants

Manual of Procedures, Volume II: Engineering Permitting Procedures,

Part 4: New and Modified Sources of Toxic Air Contaminants

### **Proposed Amendments to:**

Regulation 2: Permits,

Rule 1: General Requirements

Rule 2: New Source Review

Rule 9: Interchangeable Emission Reduction Credits

Regulation 8: Organic Compounds,

Rule 34: Solid Waste Disposal Sites

Rule 40: Aeration of Contaminated Soil and Removal of  
Underground Storage Tanks

Rule 47: Air Stripping and Soil Vapor Extraction Operations

Regulation 11: Hazardous Pollutants,

Rule 16: Perchloroethylene and Synthetic Solvent Dry Cleaning  
Operations

Toxic Evaluation Section  
Bay Area Air Quality Management District



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## **1. Executive Summary**

For the last eighteen years, the District has had a program to evaluate and reduce the public's exposure to toxic air contaminants (TACs). TACs are air pollutants which may cause or contribute to an increase in mortality, or in serious illness, or which may pose a potential hazard to human health. The District's overall air toxics program includes three individual regulatory programs directed at stationary sources of TACs. Two of these programs apply to sources at existing facilities, and the third is the Air Toxics New Source Review (NSR) Program, which focuses on proposed projects involving new and modified sources. This staff report addresses proposed changes to the District's Air Toxics NSR Program.

The goal of the Air Toxics NSR Program is to prevent significant increases in health risks resulting from new and modified sources of TACs based on preconstruction permit review. The program is also intended to reduce existing health risks by requiring updated control requirements when older, more highly polluting, sources are modified or replaced. The Air Toxics NSR Program was established in 1987 at the direction of the District's Board of Directors, and has been implemented based on policies and procedures established by the District's Air Pollution Control Officer (APCO).

The Air Toxics NSR Program is a health risk-based program, meaning that the program requirements are based on the results of health risk assessment (HRA). An HRA is an analysis that estimates the increased likelihood of health risk for individuals in the affected population that may be exposed to emissions of one or more toxic substance. The Air Toxics NSR Program uses an HRA methodology that was specifically developed for air pollution control programs in California. This methodology is documented in State HRA guideline documents, which have been updated several times since their original publication in 1987. Under the Air Toxics NSR Program, District staff complete a site-specific Health Risk Screening Analysis (HRSA) as part of the permit evaluation process for any proposed project with TAC emissions that exceed specified de minimis toxic trigger levels.

Depending on the results of an HRSA, new and modified sources may be required to control emissions of TACs using the Best Available Control Technology for Toxics, or TBACT. The residual emissions remaining after the use of TBACT are also evaluated to make sure that the health risks for any exposed individual in the surrounding community will not be significantly increased by the proposed project. The current Air Toxics NSR Program also allows the APCO to consider the degree of uncertainty in the HRSA, along with a number of other factors, in making a risk management decision to issue or deny a permit.

The District is now proposing to codify the policies and procedures that make up the Air Toxics NSR Program by adopting a new District rule: Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants, and a new part to its Manual of

Procedures. Amendments to several other District rules are also proposed in order to maintain consistency with Regulation 2, Rule 5. The goals of this rule development project are to: (1) improve the legal defensibility of the District's permitting decisions, (2) increase the clarity and public visibility of program requirements, and (3) update and enhance program requirements primarily to increase conformity with updated State guidelines.

The most significant proposed changes to the Air Toxics NSR Program are:

- Currently, HRSAs are completed to evaluate and limit chronic (i.e., long-term) health risks resulting from TAC emissions. The proposed rule would add the consideration of acute (i.e., short-term) health risks, and establish an acute project risk limit.
- Currently, TBACT is required for a project that results in a cancer risk of greater than 1.0 in one million. The proposed rule would change the TBACT threshold from a project-basis to a source-basis, and add a TBACT threshold for chronic non-cancer health risks. Under the proposed rule, any new or modified source would be required to use TBACT if the source risk is a cancer risk greater than 1.0 in one million and/or a chronic hazard index greater than 0.20. These changes focus the requirement for state-of-the-art control equipment on those sources that contribute most significantly to health risks, and provide a greater level of protection for non-carcinogenic health effects.
- The proposed rule would remove existing exemptions from project risk limits for dry cleaners due to advances in less-toxic technologies. This change will provide additional incentives for dry cleaners to use alternatives to perchloroethylene.
- The proposed rule and HRSA Guidelines include updated lists of toxic air contaminants, toxicity values, and exposure assessment procedures that are consistent with the most recent State risk assessment guidelines adopted by Cal/EPA's Office of Environmental Health Hazard Assessment (OEHHA). The rule, and HRSA guidelines, will be periodically updated to incorporate future changes to the OEHHA guidelines.
- Currently, the APCO has discretion to issue permits for projects that exceed risk standards based on risk management considerations, although this has rarely been done. The proposed rule would eliminate the provision for discretionary risk management. All projects would be required to comply with project risk limits of 10 in one million for cancer risk, and 1.0 for acute and chronic hazard index.
- The proposed amendments to Regulation 3 would increase permit application fees for applicants requiring an HRSA in order to fund the additional staff resources needed to implement the proposed program changes. These proposed fee amendments have recently been combined with the District's overall proposed amendments to Regulation 3 for the upcoming FY 2005-06, which are scheduled to be considered for adoption on June 15, 2005.

The District has prepared an Environmental Impact Report (EIR) to evaluate the potential for environmental impacts associated with this regulatory proposal. The EIR indicates that the District's proposal to require new and modified dry cleaners to meet the project risk limits of Regulation 2, Rule 5, may result in a potentially significant increase in emissions of precursors to ozone, a criteria air pollutant. This may result from dry cleaners that switch from perchloroethylene, a negligibly reactive organic compound, to less toxic cleaning solvents (i.e., VOCs) that may be precursors to ozone formation. Even though the District proposal is expected to reduce emissions of perchloroethylene and other toxic air contaminants, the potential for this increase in VOC emissions is considered significant under CEQA. No other potentially significant adverse impacts were identified in the EIR.

The changes in the Air Toxics NSR Program that would result from adoption of the proposed rule and rule amendments are not expected to result in significant economic impacts. The regulatory proposal meets the required findings of necessity, authority, clarity, consistency, non-duplication, and reference. The District conducted a series of five workshops in 2003, and one workshop in 2005, to discuss the proposals with interested parties, and has considered all public comments in establishing the final proposal. District staff believe that the regulatory proposal meets the goals of the rule development project, and recommends that it be adopted with an effective date of July 1, 2005.

## **2. Background**

### **2.1 Introduction**

This staff report addresses proposed changes to the Bay Area Air Quality Management District ("the District") Air Toxics New Source Review (NSR) Program. The Air Toxics NSR Program has been an important part of the District's air pollution control efforts for the past eighteen years. The proposed changes in the program will result in the adoption of a new District rule, and amendments to several existing District rules and Manual of Procedures. The proposed regulatory language is provided in Appendix A of this report.

### **2.2 The District Air Toxics Program**

Over the last several decades, public concern about air pollution has expanded from what is typically called "smog" and other criteria air pollutants (so called because they are regulated by first developing health-based criteria as the basis for setting permissible ambient air quality standards) to include toxic air contaminants (TACs). A pollutant is considered toxic if it has the potential to cause adverse health effects such as cancer, birth defects, respiratory ailments, or other serious illness.

For the last eighteen years, the District has had a program to evaluate and reduce the public's exposure to TACs. The District's program, along with other programs in place at the State and national level, have significantly reduced exposure to TACs through the control of emissions from stationary sources, motor vehicles, fuels, and consumer products. For example, over the past ten years the average cancer risk from TACs that are routinely measured in the ambient air has been cut in half. Despite this success, regulatory programs continue to be needed to manage and further reduce public exposure to TACs.

The District's efforts to reduce public exposure to TACs include the promotion of measures directed at reducing emissions from motor vehicles, which are the largest source of TACs. The District has initiated the Community Air Risk Evaluation (CARE) Program to investigate the cumulative impact of stationary, area, and mobile sources at a neighborhood-level. The CARE Program will result in targeted risk reduction measures, including voluntary risk reduction projects funded by grants (e.g., Carl Moyer and Transportation Fund for Clean Air).

The District's regulatory programs, however, focus on the stationary sources over which the District has direct regulatory authority. TACs are released from a variety of stationary sources, ranging from small facilities like dry cleaners and gasoline stations, to large facilities such as chemical factories and refineries.

The District has three regulatory programs that are used to reduce the health risks associated with exposure to TACs emitted from stationary sources: (1) a Source Category-based Control Program, (2) the Air Toxic "Hot Spots" Program, and (3) the Air Toxics NSR Program.

1. The goal of the Source Category-based Control Program is to reduce emissions from new and existing sources by establishing control measures for specific types of sources. This program includes Airborne Toxic Control Measures (ATCMs) originating from California's Toxic Air Contaminant Identification and Control Act (AB 1807, Tanner 1983), and National Emission Standards for Hazardous Air Pollutants (NESHAPs) originating from the federal Clean Air Act. The District has also adopted a number of locally developed control measures that reduce emissions of TACs including a number of rules in District Regulations 8 and 11. Recently, the California Air Resources Board (CARB) adopted a statewide ATCM to regulate stationary diesel engines.
2. The Air Toxics "Hot Spots" (ATHS) Program was established with the adoption of the Air Toxics "Hot Spots" Information and Assessment Act (AB 2588, Connelly 1987). The ATHS Program requires facilities to establish and update TAC air emissions inventories. The District then prioritizes these facilities based on the quantity and toxicity of emissions, and the proximity of the facility to potential receptors. High priority facilities are required to prepare facility-wide health risk assessments and, where health risks are determined to be above significance levels established by the District, notification of nearby residents is required. The ATHS Program also was amended (SB 1731, Calderon 1992) to require facilities



that pose a significant health risk to the community to reduce their risk by implementing a risk reduction audit and plan. A number of facilities in the Bay Area reduced TAC emissions in order to get below risk thresholds requiring public notification under the ATHS Program. In addition, many Bay Area dry cleaners that use perchloroethylene were required to implement risk reduction measures under the program.

3. The goal of the District's Air Toxics NSR Program is to prevent significant increases in health risks resulting from new and modified sources of TACs based on preconstruction permit review. The program is also intended to reduce health risks by requiring updated control requirements when older, more highly polluting, sources are modified or replaced. The rationale for this approach is that it is generally more cost-effective to apply stringent air pollution controls to sources at the time of initial construction or modification versus on a retrofit-basis. The Air Toxics NSR Program is the subject of this staff report.

## **2.3 The Existing District Air Toxics NSR Program**

### **2.3.1 Legal Authority**

The District Air Toxics NSR Program is a local program; there are no specific State or federal mandates requiring such a program. (A program established by U.S. EPA under Section 112(g) of the federal Clean Air Act requires case-by-case control technology determinations for some proposed projects with very large TAC emissions, but this does not qualify as a comprehensive air toxics NSR program). The authority for the program is derived from several sections of the California Health and Safety Code (CH&SC).

The primary authorities are provided in three sections of the CH&SC as follows: (1) CH&SC Section 42300 provides an air district the authority to establish a preconstruction permitting program, (2) CH&SC Section 42301(b) provides an air district the authority to deny permits if the Air Pollution Control Officer (APCO) is not satisfied that the proposed new and modified source(s) will comply with applicable requirements, including rules, regulations, and orders of the air district or State Board, or any air pollution requirements in the CH&SC, and (3) CH&SC Section 41700 is an air pollution requirement that prohibits emissions of air contaminants from sources which cause injury to the public or which endanger public health.

Additional authority for the Air Toxics NSR Program is provided in CH&SC Section 39659(a)(1), which indicates that air districts may adopt regulations that establish procedures for issuing permits, and take any other action that may be necessary to establish, implement and enforce programs for the regulation of Hazardous Air Pollutants (HAPs) that have been listed as TACs (all federal HAPs have now been listed as State TACs).

### **2.3.2 Risk-Based Approach**

The District Air Toxics NSR Program is a health risk-based program, meaning that the program requirements are based on the results of health risk assessment (HRA). An HRA is an analysis that estimates the increased likelihood of health risk for individuals in the affected population that may be exposed to emissions of one or more toxic substances. (Note that an HRA completed for the Air Toxics NSR Program is generally referred to as a “Health Risk Screening Analysis”, or HRSA).

Risk-based approaches are widely used in regulatory programs in the United States by federal agencies such as the Environmental Protection Agency, Department of Energy, and the Nuclear Regulatory Commission, and in California by State agencies including the California Air Resources Board, Department of Pesticide Regulation, Department of Toxics Substances Control, and the Water Resources Control Board. A risk-based approach is appropriate for the Air Toxics NSR Program because it provides site-specific information regarding potential health effects of proposed new and modified sources that can be used in an objective manner to evaluate compliance with CH&SC Section 41700.

Like many fields of science, there is considerable uncertainty in the process of health risk assessment. This uncertainty arises from lack of data in many areas and necessitates the use of models and assumptions to estimate health risks. When HRAs are used in a regulatory program, it is essential that a uniform methodology be established for estimating health risks based on a consistent set of models and assumptions. At the same time, the program should also allow for updating the HRA methodology based on advances in scientific understanding.

The District Air Toxics NSR Program uses an HRA methodology that was specifically developed for air pollution control programs in California. This methodology is documented in State HRA guideline documents, which have been updated several times since their original publication in 1987. The models and assumptions used in these guidelines are designed to err on the side of health protection in order to avoid underestimation of risk to the public.

The standard risk assessment approach currently involves four steps: (1) Hazard Identification, (2) Exposure Assessment, (3) Dose-Response Assessment, and (4) Risk Characterization. Hazard Identification involves identifying the specific toxic substances that need to be evaluated and whether each of these is a potential human carcinogen, and/or is associated with other types of adverse health effects.

Exposure Assessment involves estimating the extent of public exposure to each substance for which potential cancer risk or non-cancer health effects will be evaluated. For HRAs involving air emissions, this involves: (a) quantifying TAC emission rates, (b) modeling transport, dispersion, and fate in the environment, (c) identifying exposed populations and possible exposure routes, and (d) estimating exposure levels. While Exposure Assessment may involve estimating aggregate population-wide exposures and health risks, most risk-based regulatory programs

focus on estimating health risks to individuals within the exposed population. The level of exposure resulting from a particular source of air emissions may vary greatly between individuals depending on their proximity to the source, their degree of mobility, and many other factors. Risk assessments that are used in regulatory programs generally use a number of conservative assumptions that simplify exposure estimates, and focus on estimating health risks for a hypothetical maximally exposed individual (MEI).

Dose-Response Assessment is the process of quantifying the relationship between the level of exposure to a toxic substance and incidence of an adverse health effect in an exposed population. In carcinogenic risk assessment, the dose-response relationship is expressed in terms of a cancer potency factor (CPF) that is used to calculate the probability or risk of contracting cancer from an estimated exposure, assuming that: (a) risk is directly proportional to dose, and (b) there is no threshold for carcinogenesis. CPFs are commonly expressed as the upper bound probability of developing cancer assuming continuous lifetime exposure to a substance at a dose of one milligram per kilogram of body weight per day.

Non-cancer health effects are generally assumed to have a threshold level of exposure below which adverse effects do not occur, and the dose-response relationship is expressed on the basis of this threshold exposure level. In California HRA guidelines, these threshold levels are generally known as Reference Exposure Levels, or RELs. Typically, RELs are established by applying safety factors to the Lowest Observed Adverse Effects Level (LOAEL) or No Observed Adverse Effects Level (NOAEL) values from animal or human studies. The use of safety factors means that exceeding a specific REL does not automatically indicate an adverse health impact. Rather, it is an indication of the erosion of the margin of safety for exposure to that particular compound.

Risk characterization is the final step of risk assessment. In this step, risks are calculated by combining modeled exposure estimates determined through exposure assessment with CPFs and/or RELs developed through dose-response assessment. For each carcinogen, lifetime cancer risk is calculated by multiplying an individual's estimated exposure level by the appropriate CPF. Cancer risk from exposure to a mixture of different carcinogens is assumed to be additive. Non-cancer risk is calculated by dividing an individual's estimated short-term (i.e., acute) or long-term (i.e., chronic) exposure level to a particular substance by the appropriate REL to yield a hazard quotient (HQ). An additive approach is also used to estimate non-cancer risks resulting from exposure to pollutant mixtures by adding together the individual hazard quotients for all substances that may affect the same target organ or organ system; this sum of HQs is called a Hazard Index (HI).

### **2.3.3 Program History**

In 1986, the District's Board of Directors adopted a plan to reduce public exposure to TACs in the Bay Area. One of the plan elements was for District staff to begin reviewing permit applications for new and modified sources for potential health risks

associated with any emitted TACs. The primary goals established for this new program were to prevent significant increases in health risks from newly constructed or modified stationary sources, and to reduce health risks by requiring improved air pollution controls when older, more highly emitting, sources are modified or replaced. Additional program objectives included the use of a consistent science-based approach to evaluate health risks that involves, where possible, the consideration of site-specific factors, and the minimization of costs to permit applicants for completing these site-specific HRSAs. After holding a public workshop on the matter, the District's APCO established the Air Toxics NSR Program with the adoption of a Risk Evaluation Procedure (REP) and Risk Management Policy (RMP) in 1987.

The REP established a methodology for completing HRSAs for new and modified sources that was based on the Air Toxics Assessment Manual (CAPCOA, 1987), a guideline document that was developed by a statewide working group. The RMP established specific criteria for permit issuance where TAC emissions from a proposed project would not likely cause, or contribute significantly to, an unacceptable adverse health risk for any member of the public. The RMP also specified that the APCO was ultimately responsible for risk management, and could consider a variety of factors when determining the acceptability of a proposed project and whether to issue or deny a permit.

On several occasions in the 1990's, the District initiated rulemaking to convert the REP and RMP into rules and procedures adopted by the District's Board of Directors. In 1991, the District held workshops on the first such proposal, but the rule development process was suspended in order to take advantage of workshops being held on risk management by CARB. The process was restarted with District workshops held in 1992 and 1993. One of the goals of the 1993 District proposal was to adopt a rule that would allow the District to obtain delegation from U.S. EPA to implement federal requirements regarding new and modified sources mandated under Section 112(g) of the Clean Air Act. The District again suspended the rulemaking process to allow U.S. EPA to finalize their Section 112(g) rule. The Section 112(g) rule was adopted by U.S. EPA in December 1996, but was determined to be grossly inadequate to protect public health in the Bay Area. The District decided to incorporate these federal requirements into Regulation 2, Rule 2: New Source Review, and to continue to implement the REP and RMP.

The District's REP and RMP have been updated several times since their original adoption, primarily in response to revisions in statewide health risk assessment and risk management guidelines. These guideline revisions included HRA guidelines adopted for use in the ATHS Program, and risk management guidelines for new and modified sources adopted by CARB. The District established a specific RMP for dry cleaners that allowed permits to be issued for health risks within the action range identified in the CARB risk management guidelines, provided that the Best Available Control Technology and all reasonable risk reduction measures were employed. The District also established a specific risk management policy for diesel-fueled engines so that limitations would not need to be placed on standby engines during emergency

use. The current versions of the District's REP and RMP were adopted on February 3, 2000, with the exception of the RMP for diesel-fueled engines, which was adopted on January 11, 2002. These documents, included in Appendix B of this Staff Report, describe the existing District Air Toxics NSR Program and serve as the baseline for evaluating the changes that would result from the proposed rulemaking described in this report.

#### **2.3.4 Risk Evaluation Procedure**

The REP describes the procedures that are followed by District staff when reviewing permit applications for new and modified sources in order to determine the health risks associated with emissions of TACs. The principle components of the REP are described as follows.

1. All applications for authorities to construct or permits to operate new and modified sources are reviewed by the District for emissions of TACs that may result in adverse health effects. The same definitions of "new source" and "modified source" given in District Regulation 2, Rule 2: New Source Review are used, with the exception that the date of January 1, 1987 is used for determining applicability. The January 1, 1987 date is used because it marks the beginning of the District Air Toxics NSR Program.
2. Emissions are determined for all new and modified sources that make up a construction "project" plus any "related projects". A "project" includes all new and modified sources contained within a single permit application. A "related project" includes all new and modified sources at a facility that have been permitted within the two-year period immediately preceding the date a complete application is received, unless the permit applicant can demonstrate to the satisfaction of the APCO that the sources involved are not directly related to one another. A "related project" also includes a series of consecutive modifications to a single source (e.g., increasing a source's permitted throughput) that have occurred since January 1, 1987, regardless of the time period over which the modifications occur. The related project provisions were included in order to discourage circumvention which might be achieved by breaking a construction project into smaller pieces and submitting more than one permit application over a period of time.
3. The need for an HRSA is based on whether the total emissions for any new sources, plus the increase in emissions for any modified sources, would exceed any listed annual TAC trigger levels. The emissions for new and modified sources represent the maximum operation of the source as it is described in the permit application with any limiting permit conditions that are established by the District. The emission calculation procedures that are used are essentially the same as those used for Regulation 2, Rule 2: New Source Review. Where emissions are below all applicable TAC trigger levels, the construction project is judged to be in accordance with the District's RMP, and no risk screening analysis is required.

Due to the large number of new and modified sources that emit some quantity of TACs, and the finite resources available for conducting HRSAs, the TAC trigger

levels serve as a method to streamline the health risk evaluation process. The TAC trigger levels are established for those toxic compounds for which health effects values have been established, based primarily on statewide HRA guidelines. The TAC trigger levels were developed based on de minimis health risks using conservative assumptions regarding how emissions are released to the atmosphere, how they are transported and dispersed to off-site locations, how they are taken up into a person's body, and the time period over which exposure is assumed to occur. Projects emitting TACs at emission rates below the TAC trigger levels are not expected to cause, or contribute significantly to, an unacceptable adverse health risk for any individual.

4. If a risk screening analysis is required, the District will perform either a Level 1 or Level 2 analysis, often in an iterative manner. A Level 1 analysis, or screening analysis, employs simplified procedures and assumptions that assure a conservative estimate of public impact. There are situations, however, in which a Level 2, or refined analysis, is preferable including instances in which a screening analysis yields a risk value that exceeds levels given in the District's RMP. A refined analysis employs procedures and assumptions that are more site-specific, resulting in a risk evaluation that is more representative of actual risks. The District completes refined analyses (e.g., including using representative meteorological data, digital terrain elevation data, and site-specific exposure data) where feasible based upon available data and staff resources. An applicant, or a consultant hired by an applicant, may also perform a screening or refined analysis for District review.
5. Currently, HRSAs must be performed in accordance with a specified risk assessment methodology established for use in the ATHS Program for estimating maximum individual cancer and chronic non-cancer health risks. These guidelines consist of the Air Toxics "Hot Spots" Program Revised 1992 Risk Assessment Guidelines (CAPCOA, 1993), along with several tables of updated health effect values adopted for use in the ATHS Program by Cal/EPA's Office of Environmental Health Hazard Assessment (OEHHA).

### **2.3.5 Risk Management Policy**

The RMP specifies that the APCO is responsible for risk management at the District. The APCO may consider a number of factors in determining whether to issue or deny a permit for a proposed project together with the results of an HRSA. These factors include the degree of uncertainty in the risk analysis, possible net air quality benefits of updated replacement equipment, the lifetime of the project, incorporation of all feasible risk reduction measures, the costs of mitigation, and any benefit of the project to the local community and society. The APCO has established specific criteria in the RMP under which permits for new and modified sources can be issued without further risk management considerations. These criteria are:

1. The annual emissions associated with the project would result in an incremental cancer risk equal to or less than  $1.0E-06$  (one in a million), were the exposure to

continue for 70 years. When applicable, the chronic non-cancer risk associated with the project, expressed in terms of a hazard index, must be equal to or less than 1.0. The risk is calculated at the point of maximum residential or maximum off-site worker exposure, whichever is greater.

2. The annual emissions associated with the project would result in an incremental cancer risk greater than  $1.0E-06$  (one in a million) and equal to or less than  $1.0E-05$  (ten in a million), were the exposure to continue for 70 years, the chronic non-cancer risk associated with the project, expressed in terms of a hazard index, is equal to or less than 1.0, and TBACT has been applied to permitted sources. The risk is calculated at the point of maximum residential or maximum off-site worker exposure, whichever is greater.

In addition to the criteria listed above, the APCO has also established additional criteria under which permits for two specific categories of new and modified sources can be issued without further risk management considerations: (1) diesel-fueled engines, and (2) perchloroethylene (Perc) dry cleaners. The criteria for diesel-fueled engines are essentially the same as those listed above except that, for emergency standby engines, risks are to be calculated for all engine operation except for emergency use (as defined in Regulation 9-8-231). This provision was established so that the District would not need to limit engine operation in the case of an emergency.

The criteria under which permits for new and modified Perc dry cleaning sources can be issued without further risk management considerations are:

1. The annual emissions associated with the project would result in an incremental cancer risk greater than  $1.0E-06$  (one in a million) and equal to or less than  $1.0E-05$  (ten in a million), were the exposure to continue for 70 years, and TBACT has been applied to permitted sources. TBACT for Perc dry cleaners is as follows:
  - a. TBACT is a Secondary Control Machine for any new installation of a dry cleaning machine (including new facilities, replacement machines, and additional machines at existing facilities) or for an increase in the permitted level of solvent emissions, except as follows for relocated machines.
  - b. TBACT is a Closed-loop Machine for a relocated machine. The relocation of an existing facility's machine to a new non-residential facility within the District is exempt from secondary control requirements.
2. The annual emissions associated with the project would result in an incremental cancer risk greater than  $1.0E-05$  (ten in a million) and equal to or less than  $1.0E-04$  (one hundred in a million), were the exposure to continue for 70 years, TBACT has been applied to permitted sources, and all reasonable risk reduction measures have been applied. All reasonable risk reduction measures for Perc dry cleaners are as follows:
  - a. A Vapor Barrier Room, consistent with Regulation 11-16-307.1 and the Dry Cleaner Ventilation Guidelines, for a new facility (including a relocated facility), or

- b. An enhanced ventilation system, consistent with Regulation 11-16-307.2 and the Dry Cleaner Ventilation Guidelines (i.e., a Vapor Barrier Room, Vapor Capture Room, Partial Vapor Room, or Local Ventilation System), for a proposed project at an existing facility that is not co-residential.

The project acceptability criteria identified in the RMP are summarized in Table 1 below.

**Table 1. Summary of District RMP Criteria for Issuance of Permits without Further Risk Management Considerations**

<b>Project Acceptability Criteria</b>	<b>Cancer Risk Threshold</b>	<b>Chronic Hazard Index Threshold</b>
Project is acceptable as proposed. <sup>1</sup>	$\leq 1.0$ in a million	$\leq 1.0$
Project is acceptable if all sources in the project have TBACT. <sup>1</sup>	$\leq 10$ in a million	$\leq 1.0$
For dry cleaners, project is acceptable if all sources in the project have TBACT and all reasonable risk reduction measures have been applied.	$\leq 100$ in a million	$\leq 1.0$

<sup>1</sup> Health risks for emergency standby diesel engines do not include emissions that occur during emergency use.

### 2.3.6 Program Implementation

Under the REP, the District reviews all permit applications for new and modified sources for TAC emissions. Annual TAC emissions are estimated by District engineers based on source-specific emissions data or material balance, vendor guarantees, and/or representative general emission factors, taken together with the maximum requested source activity levels (e.g., maximum annual fuel or material throughput).

An HRSA is prepared by District staff for proposed projects with TAC emissions that would exceed any listed annual TAC trigger levels. To conserve limited resources, an iterative approach is often used in completing these HRSAs. The iterative approach involves initially completing a simplified health-conservative HRSA in order to determine whether a more complex, refined, HRSA is needed. These refinements are often applied sequentially using site-specific information until the requirements of the RMP are met.

The District has made significant improvements in recent years with respect to the speed and level of refinement with which HRSAs can be completed. Most of these



improvements have to do with the use of more advanced computer tools and digital data that are used to complete the air dispersion modeling and land-use analysis portions of the analysis. These tools include digital topographic maps, aerial photos, terrain elevations, parcel maps, and real estate property databases.

If, after exhausting all reasonably available levels of refinement, the results of an HRSA indicate that the project will not meet the requirements of the RMP as proposed, District staff will identify options under which compliance can be achieved. The permit applicant may then consider these options, and is given the opportunity to amend their application, or submit a new permit application, with changes in the project necessary to reduce health risks to levels specified in the RMP.

In relatively rare instances, the District APCO will deny a permit for a proposed project because it has not met the health risk requirements of the RMP. In the vast majority of cases, however, viable permitting options can be identified where the use of emissions control technology and/or other risk reduction measures will be successful in reducing the health risks to acceptable levels.

Prior to 2000, the District completed HRSAs for an average of about 175 permit applications per year. This number increased to 255 in 2000, to 440 in 2001, and to 602 in 2002. More recently, the number of HRSAs completed was 432 in 2003, and 403 in 2004. The large increase in the number of HRSAs completed in the last five years is due primarily to the elimination of permit exemptions for certain sources, particularly engines that are used to supply backup power in the event of an emergency.

A wide variety of different types of sources have TAC emissions and may be subject to HRSA requirements. Diesel engines are currently the most common type of source evaluated in the Air Toxics NSR Program, accounting for about two thirds of the HRSAs completed in 2004. Other source categories for which significant numbers of HRSAs are completed are, in order of decreasing numbers, gasoline dispensing facilities (GDFs), various gas-fired combustion sources, soil-vapor extraction systems, and dry cleaners. Other common, but less numerous, sources evaluated include landfills surface coating operations, organic liquid storage tanks (i.e., non-GDFs), coffee roasters, crematories, and furniture strippers.

### **3. Proposed Changes to Air Toxics NSR Program**

#### **3.1 Goals of Proposed Changes to Air Toxics NSR Program**

The District is proposing to codify the REP and RMP by adopting a new District rule, and a new part to the Manual of Procedures, as follows: Regulation 2: Permits, Rule 5: New and Modified Sources of Toxic Air Contaminants, and Manual of Procedures Volume II: Engineering Permitting Procedures, Part 4: New and Modified Sources of Toxic Air Contaminants. The District is also proposing amendments to other rules

and regulations to maintain consistency with the new Regulation 2, Rule 5, as follows: Regulation 2: Permits, Rule 1: General Requirements, Rule 2: New Source Review, and Rule 9: Interchangeable Emission Reduction Credits; Regulation 8: Organic Compounds, Rule 34: Solid Waste Disposal Sites, Rule 40: Aeration of Contaminated Soil and Removal of Underground Storage Tanks, and Rule 47: Air Stripping and Soil Vapor Extraction Operations; and, Regulation 11: Hazardous Pollutants, Rule 16: Perchloroethylene and Synthetic Solvent Dry Cleaning Operations.

The goals of this proposed rulemaking are:

1. To improve the legal defensibility of the District's permitting decisions concerning new and modified sources of TACs. The proposed program would be implemented through rule requirements and procedures adopted by the District's Board of Directors, rather than policies and procedures adopted by the District's APCO.
2. To increase the clarity and public visibility of program requirements. Publication in the District's rulebook and Manual of Procedures will clarify program requirements. A series of community-based workshops was conducted in order to get input and increase public awareness of the program.
3. To update and enhance the existing District Air Toxics NSR Program. Most of the changes that are proposed are intended to increase conformity with updated State health risk assessment and risk management guidelines.

The proposed program updates and enhancements will require additional District staff resources due to increases in the number of HRSAs that will need to be conducted and reviewed, and due to added complexity in these analyses. The District is therefore also proposing amendments to Regulation 3: Fees, to provide the necessary revenue to fund these activities.

### **3.2 Program Updates and Enhancements**

The adoption of the proposed Regulation 2, Rule 5, and the companion Manual of Procedures, Volume II: Part 4, will codify the existing District REP and RMP. It will also update and enhance program requirements and increase conformity with State risk assessment and risk management guidelines. These guidelines include:

1. Revised health risk assessment guidelines established by OEHHA. The SB 1731 amendments to the ATHS Program required OEHHA to revise the risk assessment guidelines used in the ATHS program after a peer review process, and in consideration of input from the State's Scientific Review Panel (SRP). After a multi-year effort, OEHHA adopted *Air Toxic Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments* (August 2003) for use in the ATHS Program in October of 2003. (The new OEHHA HRA guidelines will be referred to in the remainder of this report as the "2003 HRA Guidelines"; the existing HRA guidelines will be referred to as the "1993 HRA Guidelines").

2. CARB released the Hotspots Analysis and Reporting Program (HARP) in December 2003 (CARB, 2003a). The HARP software is intended to facilitate the preparation of HRAs using the 2003 HRA Guidelines.
3. The District has been informed, however, that OEHHA is evaluating further refinements to the exposure assessment methods that are given in the 2003 HRA Guidelines, and that these refinements may result in significant changes to exposure estimates for the breathing (i.e., inhalation) pathway. In light of this, CARB and OEHHA released *Air Resources Board Recommended Interim Risk Management Policy for Inhalation-Based Residential Cancer Risk* (CARB, 2003b), that is to be used to augment the 2003 HRA Guidelines where a single cancer risk value (rather than a range of risk values) is needed or prudent for characterizing risk, or where a single risk value is used for risk management decision-making for residential receptors. The District will use this Interim Policy and the recommended 80th percentile breathing rate value (302 Liters/Kilogram-day) for implementing Regulation 2, Rule 5, until OEHHA completes their refined review of exposure assessment methods. The 80th percentile value will be referred to as the "Interim Residential Breathing Rate."

In 1993, CARB issued *Risk Management Guidelines for New and Modified Sources of Toxic Air Pollutants* (CARB, 1993). These guidelines were intended to assist air districts in making permitting decisions for new and modified sources of TACs. In 2000, CARB also issued *Risk Management Guidance for the Permitting of New Stationary Diesel Fueled-Engines* (CARB, 2000). The suggested risk levels for permitting decisions in the CARB guidelines are summarized in Table 2.

**Table 2. Summary of CARB Risk Management Guideline  
Criteria for Issuance of Permits**

<b>Project Acceptability Criteria</b>	<b>Cancer Risk Threshold</b>	<b>Hazard Index Threshold</b>
Project is acceptable as proposed. <sup>1</sup>	$\leq 1.0$ in a million	$\leq 0.2$
Project is acceptable if all sources in the project have TBACT. <sup>1</sup>	$\leq 10$ in a million	$\leq 1$
Project is acceptable if all sources in the project have TBACT, the applicant submits a Specific Findings Report, and the APCO finds that a permit should be issued. <sup>1</sup>	$< 100$ in a million	$\leq 10$
For diesel engines, project is acceptable if specific technology requirements are met. In addition, for non-emergency engines used more than 400 hr/yr, project is acceptable if a Specific Findings Report is prepared and the APCO finds that a permit should be issued.	No specific upper bound risk limit established	No specific upper bound risk limit established

<sup>1</sup> Districts may exempt certain categories of small businesses (e.g., dry cleaners, wood furniture refinishers, gasoline service stations), which have implemented all technically feasible and cost effective control measures.

The proposed Air Toxics NSR Program updates and enhancements are described in the following sections.

### **3.2.1 Acute Health Risks**

#### Proposal

Add the consideration of acute (i.e., short-term) health risks, to conform to the 2003 HRA Guidelines, and limit project risk to an acute hazard index of 1.0, to conform to CARB risk management guidelines.

#### Discussion

The existing District REP and RMP focus on adverse health effects that may result from long-term (i.e., chronic) exposures to TACs. There are no specific requirements for consideration of health effects that may result from acute exposures. Acute health effects have not previously been considered because: (1) health effect values for acute exposures for the general public have been of limited number and uneven quality, and have focused on industrial accidents instead of routine or predictable short-term emissions, and (2) use of the available health effects values have generally

indicated (e.g., for a wide variety of sources evaluated under the requirements of the ATHS Program) that these acute exposures are rarely of concern for routine or reasonably predictable non-routine emissions.

In the 2003 HRA Guidelines, OEHHA has established uniform, science-based, guidelines for the derivation of acute health effect values that are applicable to general public exposures to routinely emitted TACs (OEHHA, 1999). The 2003 HRA Guidelines establish 51 acute RELs, almost all of which were developed *de novo* for these guidelines. The District is proposing to expand the scope of the Air Toxics NSR Program by using these new OEHHA acute RELs to evaluate short-term health effects.

The District program will focus on acute exposures to TACs that result from emissions that are routine or reasonably predictable in nature rather than those that are the result of accidents. Accidental releases of toxic compounds are separately regulated under the California Accidental Release Prevention (CalARP) Program. The CalARP Program is administered by the California Office of Emergency Services (OES) and is implemented by local administering agencies in each city or county. The purpose of the CalARP program is to reduce the frequency of accidental releases of hazardous substances and reduce the consequences in the event a release occurs.

An acute REL is an air concentration that is not likely to cause adverse effects in a human population exposed to that concentration for a short period of time. Almost all of the acute RELs are based on one-hour exposures, except for a few that are based on exposures of several hours (i.e., 4-, 6-, and 7-hour). The acute RELs are based on the most sensitive, relevant, adverse health effect reported in the medical and toxicological literature. All but a few of the acute RELs are protective of mild health effects, which are considered minor and reversible (e.g., mild irritation of the eyes, nose or throat). The RELs are designed to protect the most sensitive individuals in the population by the inclusion of margins of safety. Inclusion of margins of safety means that exceeding a specific REL does not automatically indicate an adverse health impact. Rather, it is an indication of the erosion of the margin of safety for exposure to that particular compound.

As is the case for estimating chronic non-cancer health effects, a hazard index approach is used to estimate potential acute health effects. For a given TAC, the acute hazard quotient is the ratio of the estimated short-term exposure to the applicable acute REL. To assess the cumulative impact resulting from exposure to more than one compound, the effects are assumed to be additive for a given toxicological endpoint. Thus, where multiple TACs are being considered, the total acute hazard index is the sum of the individual acute hazard quotients for all TACs identified as affecting the same target organ or organ system.

The District is proposing to add a requirement (subsection 2-5-302.3) that would limit the project risk to an acute hazard index of 1.0. The District believes that the proposed project risk limits for acute health effects are adequate to protect public health without establishing a specific TBACT requirement based on acute health risks

alone. It is expected that many sources will require emissions controls, in some cases at a BACT-level or beyond, in order to keep the project risk from exceeding an acute hazard index of 1.0. Also, most TACs with acute RELs also have chronic RELs, and the District is proposing a stringent TBACT requirement for chronic non-cancer health effects (see next section of this report). Finally, most TACs are also regulated as either precursor or non-precursor organic compounds, or as particulate matter, and have BACT requirements specified in District Regulation 2, Rule 2 (i.e., for new and modified sources that emit 10 pounds per day or more).

The District is proposing to include all compounds with OEHHA acute RELs in the Air Toxics NSR Program with the exception of carbon monoxide, nitrogen dioxide, and sulfur dioxide. Each of these is a criteria air pollutant, rather than a TAC, with existing requirements for air quality impact analysis in District Regulation 2, Rule 2.

Toxic trigger levels expressed as one-hour emission rates are being established (i.e., in Table 2-5-1) to determine the need for evaluating acute health impacts. The trigger levels were determined for each TAC based on the applicable acute REL, a conservative estimate of the one-hour average air concentration that would result from a unit emission rate (i.e.,  $\text{Chi}/Q$ ), and a hazard index of 1.0. Details of the methodology used to derive these trigger levels are given in Appendix C of this report.

The same air dispersion models that are currently used for estimating chronic health effects (e.g., SCREEN, ISCST) will generally be used for estimating acute health effects. The emission rates used in the modeling will be the maximum emissions that would be expected to occur over the averaging period of the acute REL (i.e., a one-hour period in most cases). The hazard index will be calculated based on the highest model-predicted short-term average (e.g., one-hour) ambient air concentration at a receptor location where public exposure could occur. Non-inhalation pathways are not considered in the calculation of an acute hazard index.

The receptor locations used in evaluating acute health effects will, in some cases, be different from those used in evaluating chronic health effects. The evaluation of chronic health effects focus on locations where individuals live or work (excluding on-site workers, which are regulated by occupational health and safety standards rather than air district requirements). The proposed rule defines receptor location (Section 2-5-218) in a manner that is sufficiently broad in determining the MEI for acute health effects: A location where an individual may live (residential receptor) or work (worker receptor) or otherwise reasonably be expected to be exposed to toxic air contaminants for the particular chronic or acute exposures being evaluated in an HRSA. Locations include (a) locations outside of the property boundary of the facility being evaluated and, (b) locations inside the property boundary where a person may reside (e.g., at military base housing, prisons, or universities). The APCO is to consider the potential for public exposure in determining appropriate receptor locations.

The acute RELs vary widely in their relative toxicity, with values that span a full five orders of magnitude. The TAC that is expected to most frequently require emissions controls and/or other risk reduction measures in order to comply with the proposed acute project risk requirement is acrolein. Acrolein is an organic compound that is emitted from a variety of sources, including those that burn fossil fuels, and it has the lowest acute REL of any that have been adopted by OEHHA. Acrolein emissions can be effectively controlled, however (e.g., oxidation catalysts are extremely effective in removing acrolein emissions from engine exhaust).

### **3.2.2 TBACT Threshold for Chronic Non-Cancer Risks**

#### Proposal

Establish a TBACT threshold for non-cancer health risks based on a source risk of a chronic hazard index of 0.20 to conform to CARB risk management guidelines.

#### Discussion

TBACT is often necessary under the existing District RMP in order to maintain a project risk that is less than or equal to a chronic hazard index of 1.0. The District is proposing to require TBACT for sources with a chronic non-cancer hazard index greater than 0.20 (Section 2-5-301). This will conform to the recommended non-cancer TBACT requirement in the CARB risk management guidelines.

The annual toxic trigger levels used to determine the need for a risk screening analysis have been revised accordingly. The trigger levels were determined for each TAC based on the applicable chronic REL, a conservative estimate of the annual average air concentration that would result from a unit emission rate, and a target hazard index of 0.20. It should be noted that nearly all of the trigger levels for compounds that have a CPF are based on cancer rather than non-cancer target risks. Details of the methodology used to derive these trigger levels are given in Appendix C of this report.

### **3.2.3 Toxicity Values and Exposure Assumptions**

#### Proposal

With some minor exceptions, use updated toxicity values and exposure assessment procedures that conform to the 2003 HRA Guidelines.

#### Discussion

Toxicity values and exposure assessment procedures are the two central components of health risk assessment. Toxicity values are the result of dose-response evaluation, which provide quantitative relationships between the amount of exposure to a substance and the extent of toxic injury or disease. Exposure assessment procedures are used to estimate the magnitude and duration of public exposure to substances being evaluated.

The 2003 HRA Guidelines continue to use a point estimate approach for establishing dose-response relationships. That is, single toxicity values (e.g., a CPF, a chronic

REL, and/or an acute REL) are assigned to each substance as appropriate. The District is proposing to update the list of compounds included in the Air Toxics NSR Program to include those TACs with health effect values published in the 2003 HRA Guidelines (including new or updated health effects values as of January 1, 2005). These values represent the best information currently available concerning the toxicity of chemical compounds based on general population exposures and incorporating an adequate margin of safety. Table 3 contains a list of the compounds that would be either added to, or removed from, the list of compounds currently included in the REP as a result of this updating.

**Table 3. Summary of Differences in TACs Listed in Proposed Table 2-5-1 and the Existing District REP**

<b>Compounds Added</b>	<b>Compounds Removed</b>
Acrylic acid	Butyl alcohol, tert-
Antimony compounds	Chlorotoluenes
Arsine	Diethylaminoethanol
Chlorine dioxide	Dimethyl phthalate
Chloroacetophenone, 2-	Dioctyl phthalate
Chloroprene	Ethyl acetate
Chromium trioxide (as chromic acid mist)	Ethyl alcohol (ethanol)
Cyanide and compounds (inorganic)	Gasoline vapors
Diethanolamine	Methylpyrrolidone, N-
Dimethyl formamide, N,N-	Silica, respirable, crystalline
Epoxybutane, 1,2-	Tetrahydrofuran
Ethylbenzene	Trichlorobenzene, 1,2,4-
Ethylene glycol	Vapam (sodium methyldithiocarbamate)
Fluorides and compounds	
Hydrogen selenide	
Methyl tertiary-butyl ether (MTBE)	
Mineral fibers (<1% free silica)	
Ozone	
Propylene (propene)	
Propylene glycol monomethyl ether	
Sulfates	
Sulfuric acid and oleum	
Triethylamine	
Vanadium compounds	
Vinyl acetate	
Vinyl bromide	



Exposure assessment procedures begin with the use of air dispersion models to estimate air concentrations of TACs at various locations. Then, for determining cancer risk (and non-cancer risk from non-inhalation pathways) the dose, or amount received by an individual over a period of time, must be estimated. The relationship between air concentration and dose is very complex; estimates of dose can be made, however, with the use of algorithms that describe these relationships in a simplified form. Some of these algorithms describe the fate and transport of TACs in the environment and are used to estimate pollutant concentrations in applicable exposure media such as soil, water, vegetation, and animal products. Other algorithms are used to describe human uptake of TACs through exposure pathways such as direct inhalation, dermal adsorption, and various ingestion routes.

A variety of exposure parameters must be defined in order to calculate dose using exposure assessment algorithms. In the standard point estimate approach for health risk assessment, a single value (often called a default value) is assigned to each exposure parameter. Generally, high-end values are selected as default values for exposure parameters so that risk will not be underestimated. The existing District REP and RMP are based on this high-end point estimate approach as described in the 1993 HRA Guidelines.

In developing the 2003 HRA Guidelines, OEHHA completed a re-evaluation of the existing algorithms used for making exposure estimates. The re-evaluation showed that the algorithms used in the 1993 HRA Guidelines were largely appropriate for use in the point estimate approach, so these algorithms were retained with only minor modifications. A number of the default values used as exposure parameters were updated, however, based on literature reviews. Furthermore, key exposure parameters were assigned both average values and high-end default values for point estimate risks, and a distribution of values for use in a stochastic approach where adequate information was available to describe such a distribution.

The District is proposing to continue to use the point estimate approach to estimate health risks, but with the updated high-end default exposure parameters identified in the 2003 HRA Guidelines (OEHHA, 2000) with the exception of the Interim Residential Breathing Rate recommended by CARB. Also, consistent with the 2003 HRA Guidelines, an HRA may be refined using appropriate site-specific exposure parameters (i.e., a Tier 2 analysis) provided that reasonable justification can be provided for non-default values used. A Tier 3 stochastic analysis may also be used (e.g., using the HARP model) but, under the 2003 HRA Guidelines, this would only provide refined results for residential cancer risk estimates associated with non-inhalation pathways. If stochastic analysis is used, the cancer risk results used for determining compliance with Regulation 2, Rule 5, must be based on the 95<sup>th</sup> percentile cancer risk (see District HRSA Guidelines given in Appendix D of this report).

For inhalation exposures, breathing rate is a key exposure parameter used in calculating cancer risk. Breathing rate is typically expressed using units of liters of air

respired per day, for each kilogram of body weight. In the 1993 HRA Guidelines, a default daily breathing rate of 286 L/kg-day is used for residents, based on a respiration rate of 20 cubic meters per day, and a 70 kg body weight. The 2003 HRA Guidelines increase this default (95 percentile) breathing rate for residents to 393 L/Kg-day. CARB recommends using the 80th percentile value (Interim Residential Breathing Rate) of 302 L/Kg-day for estimation of a single risk value for risk management decision-making.

Exposure frequency (i.e., days per year exposed) and exposure duration (i.e., years exposed) are other key assumptions used in the calculation of cancer risk. For residents, the 1993 HRA Guidelines use a default value of 365 days/yr for exposure frequency, and a default value of 70 years for exposure duration. The 2003 HRA Guidelines decrease the default residential exposure frequency slightly to 350 days/yr, and retain the 70-year default exposure duration.

When combined, use of the default values for breathing rate, exposure frequency, and exposure duration given in the 2003 HRA Guidelines result in residential inhalation exposure estimates that are 31.8 percent higher than those produced using the 1993 HRA guidelines. Point estimate exposures using the Interim Residential Breathing Rate are very similar to those provided with the 1993 HRA Guidelines.

The default breathing rate for off-site workers in the 2003 HRA Guidelines is increased to 149 L/Kg-day, based on an hourly breathing rate of 18.6 L/kg-hr (i.e., 1300 L/hr for a 70 kg worker). The 1993 HRA Guidelines use a default breathing rate of 95.3 L/kg-day for workers, based on the same hourly breathing rate used for residents (i.e., 11.9 L/kg-hr) but applied to an 8-hour rather than a 24-hour period.

For workers, the 1993 HRA Guidelines use a default value of 240 days/yr for exposure frequency, and a default value of 46 years for exposure duration. The 2003 HRA Guidelines increase the default worker exposure frequency slightly to 245 days/yr, but decrease the default exposure duration to 40 years.

When combined, use of the default values for breathing rate, exposure frequency, and exposure duration given in the 2003 HRA Guidelines result in worker inhalation exposure estimates that are 38.7 percent higher than those produced using the 1993 HRA Guidelines. The District intends on conforming to these worker exposure assumptions in HRSAs completed for the Air Toxics NSR Program. The worker exposure assumptions do not affect the trigger levels in Table 2-5-1 because these are based on residential exposure assumptions.

For certain TACs, potential exposures from non-inhalation pathways may need to be estimated. In the 2003 HRA Guidelines, a number of the parameters used to calculate non-inhalation exposures have been updated relative to the 1993 HRA Guidelines. Tables 4a, 4b, and 4c contain a comparison of these exposure parameters.

**Table 4a. Comparison of High-End Default Exposure Parameters (Residential)**

Exposure Parameter	Units	1993 HRA Guidelines	2003 HRA Guidelines
Breathing Rate	L/kg bw-day	286	393 *
Exposure Frequency (cancer risk)	days/year	365	350
Exposure Duration (cancer risk)	Years	70	70
Body Weight	Kg	70	63
Incidental Soil Ingestion Rate	mg/kg bw-day	1.57	1.7
Water Intake Rate	ml/kg bw-day	28.6	54
Dermal Surface Area Exposed	cm <sup>2</sup>	4,656	5,500
Dermal Soil Loading	mg/cm <sup>2</sup>	0.5	1.0
Dermal Absorption	None	Chemical-specific and Scenario-dependant	
Dermal Exposure Frequency	days/year	365	350
Breast Milk Consumption Rate	g/kg-day	138	138
<i>Food Consumption:</i>			
Exposed Produce	g/kg bw-day	3.57 for vine crops	12.1
Leafy Produce	g/kg bw-day	0.14	10.6
Protected Produce	g/kg bw-day	NA	4.88
Root Produce	g/kg bw-day	0.7	10.5
Beef	g/kg bw-day	1.4 for meat	6.97
Chicken	g/kg bw-day		5.02
Pork	g/kg bw-day		4.59
Eggs	g/kg bw-day		5.39
Dairy	g/kg bw-day	4.3 for milk	17.4
Fish	g/kg bw-day	0.34	1.35
Fish Bioconcentration Factor	None	Chemical-specific	

**Notes:**

\* Interim Residential Breathing Rate is 302 L/Kg-day

NA = Not Available

1993 HRA Guidelines are: CAPCOA Air Toxics "Hot Spots" Program Revised 1992 Risk Assessment Guidelines, California Air Pollution Control Officer's Association, October 1993.

2003 HRA Guidelines are: (1) Air Toxics Hot Spots Program Risk Assessment Guidelines: Part IV; Technical Support Document for Exposure Assessment and Stochastic Analysis, Office of Environmental Health Hazard Assessment, September 2000, and (2) Air Toxics Hot Spots Program Risk Assessment Guidelines: The Air Toxics Hot Spot Program Guidance Manual for Preparation of Health Risk Assessments, Office of Environmental Health Hazard Assessment, August 2003.

Per the 2003 HRA Guidelines, for multipathway evaluation, minimum exposure pathways evaluated for residents include inhalation, soil ingestion, and dermal exposure. If dioxins, furans, or PCBs are emitted, then breast-milk consumption is also mandatory. Other exposure pathways are evaluated on a site-specific basis.

**Table 4b. Comparison of Environmental Fate Evaluation**

Media	1993 HRA Guidelines	2003 HRA Guidelines
Air	$GLC = ER * X/Q$	Same as 1993 HRA Guidelines
Soil	Function of: <ul style="list-style-type: none"> <li>- deposition</li> <li>- accumulation period</li> <li>- chemical-specific half-life in soil</li> <li>- mixing depth</li> <li>- soil bulk density</li> </ul>	Same algorithm as 1993 HRA Guidelines, however some chemical-specific half-life values in soil have been revised
Water	Function of: <ul style="list-style-type: none"> <li>- direct deposition</li> <li>- material carried in by surface runoff is NOT considered</li> </ul>	Same as 1993 HRA Guidelines
Vegetation*	Function of: <ul style="list-style-type: none"> <li>- direct deposition of substance onto vegetation</li> <li>- root translocation or uptake from soil</li> </ul>	Same algorithm as 1993 HRA Guidelines, however, for concentrations due to root translocation or uptake, some "root uptake" factors for inorganics (for root, leafy, and vine vegetation) have been revised
	"k", weathering constant, used to estimate concentration due to direct deposition = $0.693/14 \text{ day}$ [20 (1/day)]	"k" = 10 (1/day)
Animal Products*	Function of: <ul style="list-style-type: none"> <li>- identified complete exposure pathways for animal (e.g., inhalation, soil ingestion, ingestion of contaminated feed and pasture, and ingestion of contaminated water)</li> </ul>	Same algorithm as 1993 HRA Guidelines, however, some specific input parameter values have been revised (CAPCOA, Table 2 vs. OEHHA, Table 5.2 - see following Table 4c). Also feed to meat, milk, and eggs transfer coefficients [Tco (d/kg)] for some chemicals have been revised (CAPCOA, Table 1 vs. OEHHA, Table 5.3)
Fish Products*	Function of: <ul style="list-style-type: none"> <li>- concentration in water</li> <li>- bioconcentration factor (bioaccumulation is NOT considered)</li> </ul>	Same as 1993 HRA Guidelines

\* Estimates of contaminants in vegetation and animals require the use of results from the air, water, and soil environmental fate evaluation

**Table 4c. Comparison of Default Values Used in Animal Product Uptake Modeling**

Exposure Parameter	Units	1993 HRA Guidelines	2003 HRA Guidelines	
<i>FOR CATTLE:</i>		Cattle/Lactating	Beef Cattle	Lactating Dairy Cattle
Body Weight	Kg	500	500	500
Inhalation Rate	m <sup>3</sup> /day	80	100	100
Water Ingestion	L/day	100	40	80
Feed Ingestion	kg/day	8/16	8	16
Soil Fraction of Feed	unitless	0.01	0.01	0.01
Soil Fraction of Pasture	unitless	0.05	0.05	0.05
<i>FOR PIGS:</i>				
Body Weight	Kg	60		60
Inhalation Rate	m <sup>3</sup> /day	7		7
Water Ingestion	L/day	8		8
Feed Ingestion	kg/day	2		2
Soil Fraction of Feed	unitless	0.01		N/A
Soil Fraction of Pasture	unitless	0.03		0.04
<i>FOR POULTRY:</i>				
Body Weight	Kg	2		2
Inhalation Rate	m <sup>3</sup> /day	1		0.4
Water Ingestion	L/day	0.6		0.2
Feed Ingestion	kg/day	0.3		0.1
Soil Fraction of Feed	unitless	0.01		N/A
Soil Fraction of Pasture	unitless	0.03		0.02

N/A = Not Applicable

### 3.2.4 Project Risk Limits for Dry Cleaners

#### Proposal

Remove existing exemptions from project risk limits for dry cleaners due to advancements in lower toxicity dry cleaning alternatives.

#### Discussion

Perchloroethylene, also known as tetrachloroethylene or Perc, is the most common chemical solvent used by dry cleaners to remove stains and soil from clothing and other fabrics. In 1991, OEHHHA completed a toxicity review of Perc and adopted a revised CPF that was 10 times higher than the potency value used in the HRA Guidelines in effect at that time. Following this action, the District determined that the use of this revised toxicity value would result in maximum estimated lifetime cancer risks for many new and modified Perc dry cleaners that would exceed project risk levels established in the District RMP (i.e., 10 in a million). The District then completed an evaluation of risk reduction measures available to dry cleaners

including the use of alternative non-Perc dry cleaning technology, and emission control technologies and work practice standards for Perc machines.

The results of this evaluation indicated that non-Perc alternative dry cleaning technologies were either: (1) not adequately advanced for the District to specify instead of Perc, or (2) slated to be phased-out as stratospheric ozone depleting compounds (e.g., CFCs). Furthermore, the District's evaluation indicated that, although a number of reasonable risk reduction measures were available to reduce the risk from Perc dry cleaners, in many cases they would not be able to reduce the risk below the 10 in a million criterion using the revised CPF. In consideration of these factors, the District established a specific RMP for Perc dry cleaners that would allow permits to be issued for maximum cancer risks up to 100 in a million if TBACT and all reasonable risk reduction measures (e.g., vapor barrier rooms with enhanced ventilation) were used.

The District is now proposing to amend the criteria for permit approval for new and modified dry cleaners to conform to those provided for other types of sources (i.e., project risk limited to 10 in a million). This proposal is based largely on an updated evaluation of non-Perc alternative dry cleaning technologies, which have improved significantly in recent years. New solvents and equipment have been developed as alternatives to Perc including high flashpoint petroleum (HFP) solvents (e.g., Exxon DF2000<sup>TM</sup>), D5 siloxane (e.g., Green Earth<sup>TM</sup> solvent), glycol ether (e.g., Rynex<sup>TM</sup>), aqueous (i.e., wet cleaning) processes and equipment, carbon dioxide technology, and other non-halogenated solvents used with closed-loop dry cleaning machines. A brief summary of these technologies follows.

1. High flashpoint petroleum (HFP) solvents are the most popular alternatives to Perc. About 25 percent of existing machines and 75 percent of new installations in the Bay Area use HFP solvents. The toxicity of HFP is very low and soil contamination is not a great concern (most new machines have spill pans; HFP does not migrate in soil as easily as Perc and readily biodegrades). Although Perc has higher solvency and cleans with less spotting, HFP is less damaging for some delicate garments (e.g., wedding dresses that have buttons and sequins). The new petroleum closed-loop machines typically use less solvent than Perc machines. Disadvantages include slight flammability, and its contribution to tropospheric ozone formation.
2. Green Earth<sup>TM</sup> (decamethylcyclopentasiloxane, or D5) is a relatively new solvent that can be used in petroleum closed-loop machines. Suppliers claim that D5 siloxane won't bleed colors (allows mixing colors in fewer loads) and creates very little lint and wrinkling, resulting in reduced labor costs and fewer damage claims. D5 and other siloxanes are commonly used in various consumer products (e.g., shampoo and deodorant). Based on available data, D5 seems to have relatively low toxicity. GE Silicones has, however, preliminary results from a chronic toxicity study of D5, and has indicated one "unusual result" which was a statistically significant trend for uterine tumors in female rats, which has prompted further study of the toxicity of this compound. Approximately two percent of existing

machines and ten percent of new dry cleaning machines installed in the Bay Area use D5 siloxane.

3. Wet cleaning has a negligible environmental impact. Although very few facilities use wet cleaning processes exclusively (primarily because of higher labor costs and potential damage to sensitive fabrics), improved detergents and processes have induced some dry cleaners to use wet cleaning for a portion of their cleaning. The District is currently developing a demonstration program that will provide grants to dry cleaners willing to switch to non-toxic alternative processes (professional wet cleaning or carbon dioxide). CARB is developing a statewide grant program for nontoxic alternatives to Perc that is funded by fees on Perc sales.
4. Carbon dioxide (CO<sub>2</sub>) technology has the least environmental impact but vendors have struggled to gain market share because of the high cost of equipment, which operates at high pressures (i.e., about 700 psig). CO<sub>2</sub> cleans very well and does not damage most fabrics. While only a few CO<sub>2</sub> machines are currently in use in California, this technology is expected to greatly expand over time; incentive grant programs are expected to accelerate this trend.
5. Other potential alternative solvents include Rynex<sup>TM</sup> (glycol ether), Puredry<sup>TM</sup> (petroleum with fluoroether additives), and n-propylbromide (nPB). These solvents have less toxicity than Perc, but greater than the other alternatives listed above (possibly with the exception of D5). Puredry is being used in only one machine in the Bay Area. Rynex<sup>TM</sup> and nPB are not currently used in the Bay Area.

The District is not proposing to ban the use of Perc in new or existing dry cleaning machines. There are many Perc dry cleaners in the Bay Area that have maximum cancer risks that do not exceed 10 in a million. These facilities typically have relatively low Perc emissions, use state-of-the-art risk reduction measures (e.g., vapor barrier rooms), and/or are not in close proximity to residential and off-site worker receptor areas. The majority of new dry cleaning machines currently purchased, however, are based on non-Perc technologies; the District's proposal will likely accelerate this trend.

### **3.2.5 Discretionary Risk Management Provision**

#### Proposal

Eliminate provisions for discretionary risk management.

#### Discussion

The existing RMP indicates that the APCO is responsible for risk management at the District and may consider a number of factors in determining whether to issue or deny a permit for a proposed project together with the results of a risk screening analysis. The District is proposing to eliminate this provision. Discretionary risk management actions will not be allowed, and all projects will be required to comply with project risk

limits of 10.0 in one million for cancer risk and 1.0 for acute hazard index and 1.0 for chronic hazard index.

### **3.3 Other Program Changes**

#### **3.3.1 Basis for TBACT Applicability**

##### Proposal

Change TBACT requirement from a project-level basis to a source-level basis.

##### Discussion

A proposed project often will include multiple sources that vary widely in the quantity and/or toxicity of their TAC emissions. In these instances, it is common for the maximum health risk for a project to be “driven” by one or two sources, with relatively insignificant contributions from other sources in the project.

The existing RMP specifies that the requirement for TBACT be based on the maximum health risks determined for all new and modified sources that are included in a project. This provision sometimes results in instances where TBACT is required for some minor new and modified sources in a project that do not cause, or contribute significantly to, adverse health risks.

The District is proposing to address this issue by changing the basis under which TBACT is required from project risk to source risk (i.e., the maximum risk for an individual source, or permit unit). The existing TBACT threshold for cancer risk (i.e., 1 in a million), and the proposed TBACT threshold for chronic non-cancer risk (i.e., HI of 0.2), are considered to be appropriate source-level applicability criteria. Under this proposal, TBACT would therefore be required for a source if it results in a maximum cancer risk that exceeds 1.0 in a million and/or a maximum chronic HI that exceeds 0.2. In order to safeguard against instances where multiple minor sources in a project might cumulatively result in a significant contribution to risk, the District is proposing to retain the project risk limits of the existing RMP.

#### **3.3.2 Definition of Project**

##### Proposal

Clarify the definition of “project”.

##### Discussion

The existing REP requires that health risks be determined for all new and modified sources that make up a construction “project” plus any “related projects”. A “project” includes all new and modified sources contained within a single permit application. A “related project” includes all new or modified sources at a facility that have been permitted within the two-year period immediately preceding the date a complete application is received, unless the permit applicant can demonstrate that the sources involved are not directly related to one another. In order to clarify the criteria by which sources will not be considered “related to one another”, the definition of “project” in



Section 2-5-216 indicates that previously permitted sources within the two-year window can be excluded from the project if the applicant demonstrates to the satisfaction of the APCO that construction or modification of the sources included in the current application is neither (1) a reasonably foreseeable consequence of the previous project, nor (2) a critical element or integral part of the previous project.

The proposed definition of “project” given in Section 2-5-216 is otherwise similar to that provided in the REP. The term “related projects” is not used in the definition, but is included in concept within the definition of project. The “consecutive modifications” provision is clarified to indicate that it applies only to modifications that occur after January 1, 1987, which marks the start of the District’s Air Toxics NSR Program. The provision for considering a series of new and modified permits issued within a two-year period as a single project is retained, as this has proven to be a pragmatic approach to discourage potential circumvention that could be achieved by submitting permit applications in a piecemeal manner (e.g., it is unlikely that many construction projects could be drawn out in a manner such that all required construction permits would not need to be obtained within a two-year period).

### **3.3.3 Permit Fees**

#### Proposal

Increase permit fees for permit applications that require an HRSA in order to fund additional District staff resources needed to implement Air Toxics NSR program enhancements. These proposed fee changes will be integrated with other contemporaneous fee changes and will be presented to the Board of Directors for consideration in a separate public hearing specifically for Regulation 3.

#### Discussion

The District Air Toxics NSR Program is funded by collecting permit fees from facilities that are subject to program requirements. The current fee structure, delineated in District Regulation 3: Fees, specifies that a Toxic Surcharge Fee be collected for any new and modified sources that emit one or more TAC at a rate which exceeds an established toxic trigger level. The amount of the Toxic Surcharge Fee varies depending on the type of source involved.

The proposed updates and enhancements to the Air Toxics NSR Program will require additional staff resources due to increases in the quantity and complexity of the HRSAs that will need to be conducted and reviewed. The additional staff resources needed is estimated to be between one and two full time equivalents (FTEs). The District is proposing revisions to Regulation 3: Fees that will provide sufficient revenue to cover the cost of the necessary additional staff resources.

For many permit applications, the Toxic Surcharge Fee is currently the minimum specified fee of \$182 (this fee may be reduced by 50 percent if the facility qualifies for a small business discount). This minimum fee is far below the District’s cost of time and materials needed to conduct an HRSA. The proposed revisions to the fee

structure will bring the minimum Toxic Surcharge Fee more in line with the District costs incurred for completing the HRSA.

The proposed amendments will increase the Toxic Surcharge Fee for permit applications that require an HRSA by \$272 (\$136 for facilities that qualifies for a small business discount). In addition, this fee will now be called a “Risk Screening Fee” so that it will not be confused with the Toxic Surcharge assessed for permit renewals. The minimum Risk Screening Fee for many permit applications will now be \$454 (i.e., \$182 plus \$272), and half of this amount (i.e., \$227) if the facility qualifies for a small business discount.

## **4. Proposed Rule and Rule Amendments**

### **4.1 Proposed Regulation 2, Rule 5**

The District is proposing to adopt a new rule, Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants. The rule is organized into six sections as follows: General (section numbers in the 100’s), Definitions (200’s), Standards (300’s), Administrative Requirements (400’s), Monitoring and Records (500’s), and Manual of Procedures (600’s). A copy of this proposed rule is provided in Appendix A of this staff report. A summary of the provisions of the rule follows.

#### **4.1.1 General Requirements**

The General requirements define the applicability of the rule, beginning with Section 2-5-101: Description, which states the purpose of the rule and indicates that it applies only to new and modified sources that require District permits (these permit requirements are specified in Regulation 2, Rule 1) and that emit specific listed toxic air contaminants (these are the compounds for which health effect values have been established in applicable HRA guidelines). Section 2-5-101 also indicates that sources that are subject to this rule may also be subject to the requirements of federal Clean Air Act Section 112(g), which are specified in District Regulation 2, Rule 2, Section 317. The Section 112(g) requirements will rarely apply, however, because they are triggered only by very large increases in hazardous air pollutant (HAP) emissions (i.e., 10 tons/yr of a single HAP, or 25 tons/yr of a combination of HAPs).

Section 2-5-110: Exemption, Low Emission Levels, provides an exemption from the rule where the TAC emissions from the project do not exceed specified TAC trigger levels. The purpose of this section is to screen out applications that are unlikely to exceed any of the standards of the rule, without having to perform a site-specific HRSA. This is the same approach used in the existing REP; the trigger levels have been updated, however, based on current OEHHA toxicity values and exposure assumptions included in the 2003 HRA Guidelines. The TAC trigger levels also now include hourly TAC emission rates that are used for evaluating acute health effects.

Section 2-5-111: Limited Exemption, Emergency Standby Engines, indicates that the rule does not apply to TAC emissions occurring from emergency use of emergency standby engines and emission testing of these engines required by the APCO. The emergency use exemption is carried forward from the existing RMP for diesel-fueled engines, and is intended to avoid restricting the use of these engines during emergencies. In Section 2-5-111, this provision will now be extended to other types of emergency standby engines (e.g., natural gas-fired engines) in order to encourage the use of non-diesel alternatives. In addition, the District is proposing to expand this exemption to include emissions arising from emission testing of these engines required by the APCO; this proposal is consistent with the Airborne Toxic Control Measure for stationary diesel engines that was recently adopted by CARB. Most new engines are certified by the manufacturer to meet emission standards, therefore emission testing will be very infrequently required by the APCO and these emissions are not expected to be significant.

No other source-category based rule exemptions have been included in the proposed Air Toxics NSR Rule. As was previously indicated, the District is proposing to eliminate the existing project risk exemption for Perc dry cleaners provided in the RMP. New and modified Perc dry cleaning facilities will now either need to meet the 10 in a million cancer risk standard, or switch to less toxic non-Perc alternatives.

Section 2-5-112: Applicability and Circumvention, limits applicability to new or modified source of toxic air contaminants for which an application is submitted on or after July 1, 2005 and to sources of toxic air contaminants constructed or modified after January 1, 1987 for which no authority to construct or permit to operate has been issued by the District and for which the District Rules and Regulations and Risk Management Policy in effect at the time of construction or modification required an authority to construct or permit to operate. This section was added to clarify that the District would not “look-back” and retroactively apply new standards to sources that had been properly permitted.

#### **4.1.2 Definitions**

Twenty-four separate terms that are used in Regulation 2, Rule 5 are defined in alphabetical order. The term “toxic air contaminant, or TAC” (Section 2-5-222) is used to define the specific chemical compounds that are regulated under the rule. These are the substances listed in Table 2-5-1, which are air contaminants for which health effect values have been established in the 2003 HRA Guidelines. This is not the same definition of TAC that appears in Regulation 2, Rule 1, Section 222, nor in CH&SC Section 39655(a), which are used in other programs. The District believes that common usage of the term TAC is broad enough that it can be used to refer to somewhat different groups of pollutants in different programs without undue confusion.

The definition of “new source of toxic air contaminants” given in Section 2-5-215 is essentially the same as the definition of “new source” given in Regulation 2, Rule 1, Section 232, except that it applies to sources with TAC emissions and is based on a

cutoff date of January 1, 1987 instead of March 7, 1979. The date of January 1, 1987, which is also used in the existing REP, marks the beginning of the District Air Toxics NSR Program. It is important to note that, under this definition, replacement sources are treated as being “new” and subject to Air Toxics NSR requirements; this is consistent with how replacement sources are handled under Regulation 2, Rule 2: New Source Review. This provision is intended to provide net health risk benefits by requiring updated control requirements when older, more highly polluting, sources are replaced.

The definition of “modified source of toxic air contaminants” given in Section 2-5-214 is similar to the definition of “modified source” given in Regulation 2, Rule 1, Section 234. The focus of the Section 2-5-214 definition is on increases in emissions of TACs, however, as opposed to “regulated air pollutants.” In addition, subsection 2-5-214.4, which applies to situations where a source modification results in an increase in emissions of a TAC not previously emitted, is based on whether the emissions increase would be subject to TBACT requirements (i.e., cancer risk greater than 1.0 in a million, and/or chronic hazard index greater than 0.2), rather than the previous provision used in subsection 2-1-234.4, which was based on whether the source would “fail an air toxic risk screening analysis in accordance with the current Air Toxic Risk Screening Procedure.” (Subsection 2-1-234.4 will also be amended to use the same language).

Many of the defined terms are in relatively common usage in the field of health risk assessment. The terms “Acute Hazard Index, or Acute HI” (Section 2-5-201), “Acute Hazard Quotient, or Acute HQ” (Section 2-5-202), “Chronic Hazard Index, or Chronic HI” (Section 2-5-208), “Chronic Hazard Quotient, or Chronic HQ” (Section 2-5-209), and “Cancer Risk” (Section 206), are the specific estimates of health risk that are used in the standards of the rule. The definition of cancer risk does not specify the use of the high-end exposure duration assumptions given in the 2003 HRA Guidelines (i.e., 70-years for residential receptors, and 40 years for worker receptors); these parameters will be specified in the District’s HRSA Guidelines for purposes of clarity because several other exposure durations are also used in OEHHA’s 2003 HRA guidelines (i.e., 9 and 30 years for residential exposures).

Other HRA-related terms defined include “Health Risk” (Section 2-5-210), “Carcinogen” (Section 2-5-207), “Reference Exposure Level, or REL” (Section 2-5-219), “Receptor Location” (Section 2-5-218), “Maximally Exposed Individual” (Section 2-5-212), “Residential Receptor” (Section 2-5-220) and “Worker Receptor” (Section 2-5-224). The six-month period used in the definition of residential receptor has been used as a guideline by the District for a number of years, and is also used to define “residence” in the District’s Perc dry cleaning rule (Regulation 11, Rule 16).

The definition of “Health Risk Screening Analysis, or HRSA” given in Section 2-5-211 indicates that health risks are to be “based on procedures established by the APCO.” The rule indicates (in an administrative requirement specified in Section 2-5-402: Health Risk Screening Analysis Guidelines) that the District will publish and

periodically update Health Risk Screening Analysis Guidelines that specify the procedures to be followed in determining health risks. The District does not intend for this document itself to contain detailed risk assessment procedures. Rather, it will adopt by reference the 2003 HRA Guidelines (and any subsequent updates) established by OEHHA for use in the ATHS Program (which is defined in Section 2-5-203). The document may also contain procedures intended to supplement the OEHHA guidelines such as clarifications on how specific procedures are to be implemented where additional details are needed, and simplified approaches that may facilitate the completion of HRSAs in some instances (e.g., look-up tables for specific types of sources). The District Health Risk Screening Analysis Guideline document is intended to be a "living" document; the HRSA guideline and Table 2-5-1 will be periodically updated, typically within one year of any new or revised toxicity values or exposure assessment procedures that are adopted by OEHHA for use in the ATHS program. A draft version of the document is included as Appendix D of this report. The document will be updated using a process similar to what is used for the District's BACT/TBACT Workbook. Updates to Table 2-5-1 will follow the formal rule development process including public review.

The terms "Source Risk" (Section 2-5-221) and "Project Risk" (Section 2-5-217) are used to determine the specific emitting equipment or operations for which health risks are to be quantified under the standards of the rule. The term "Facility risk", which appeared in a prior draft version of the rule, was deleted along with the discretionary risk management provisions; nevertheless, facility risk remains the essential risk value for ATHS Program requirements. While the terms "source" and "facility" are not defined in the proposed Regulation 2, Rule 5, their definitions are already provided in Sections 221 and 213 of the District's General Permit Rule (Regulation 2, Rule 1). The term "Project", however, is not defined elsewhere in District regulations, and so a definition is provided in Section 2-5-216 of the proposed rule. Here, the terms "project" and "related projects" used in the existing REP are combined. The proposed definition of "Project" includes all new and modified sources permitted within the previous two-year period, unless "the applicant demonstrates to the satisfaction of the APCO that construction or modification of the sources included in the current application was neither (1) a reasonably foreseeable consequence of the previous project, nor (2) a critical element or integral part of the previous project.

The definition of TBACT given in Section 2-5-205 is the same as that defined in Regulation 2, Rule 2 Section 244 (except that the requirement for the District to publish and periodically update a BACT/TBACT Workbook has been moved to the administrative requirements in Section 2-5-403: BACT/TBACT Workbook). TBACT for a given source or source category cannot be less stringent than that established as "Maximum Achievable Control Technology, or MACT" (Section 2-5-213), or in an "Airborne Toxic Control Measure, or ATCM" (Section 2-5-203).

The terms "Net Project Health Risk Demonstration", "Risk Reduction Measures", "Risk Reduction Plan", and "Specific Findings Report", which appeared in a prior draft version of the rule, were all related to discretionary risk management provisions.

Because the discretionary risk management provisions are not included in the proposed rule, these definitions have been deleted.

#### **4.1.3 Standards**

The TBACT (Section 2-5-301) and project risk requirements (Section 2-5-302) establish the primary standards of the rule. These requirements are the same as the requirements in the existing RMP, with the following exceptions:

1. TBACT will now be required where the chronic non-cancer HI exceeds 0.20, rather than an HI of 1.0.
2. TBACT will now be required for those sources that result in incremental increases in health risks above specified levels, rather than for all sources in a project regardless of their level of TAC emissions and health risk.
3. Short-term TAC emissions from a project must not result in an acute HI in excess of 1.0. The existing RMP has no explicit limits on acute health risks.

The 100 in a million cancer risk facility risk limit which appeared in a prior draft version of the rule in subsection 2-5-304.1 (now deleted) is also the significant risk threshold established by the District for the ATHS Program above which mandatory risk reduction measures are required under CH&SC Section 44391(a).

#### **4.1.4 Administrative Requirements**

Section 2-5-401: Health Risk Screening Analysis Requirement specifies that an HRSA shall be prepared for any project subject to the rule. This would include any project with TAC emissions that exceed one or more of the listed toxic trigger levels. The applicant may submit an HRSA for the District's review, or have the District complete an HRSA for the project. The District will notify the applicant where the results of an HRSA indicate that the project, as proposed, would not meet the requirements of the rule. The applicant is then given the opportunity to perform a more refined HRSA, or to modify the project as necessary to comply with the requirements of the rule.

Sections 2-5-402: Health Risk Screening Analysis Guidelines, and 2-5-403: BACT/TBACT Workbook, specify that the District will publish and periodically update HRSA Guidelines and a BACT/TBACT Workbook, respectively. Both are intended to be "living documents" that will be updated as appropriate by the District without a formal rulemaking process. [Note that this does not include changes in the toxic trigger levels, which will be proposed periodically as rule amendments where appropriate based on updated toxicity values and exposure factors by OEHHA.] The initial District HRSA Guidelines will adopt, by reference, the 2003 HRA Guidelines, with some specific exceptions (e.g., Interim Residential Breathing Rate). Any subsequent revisions to the HRA Guidelines used in the ATHS Program will be periodically incorporated into the District HRSA Guidelines.

#### **4.1.5 Monitoring and Records**

Section 2-5-501: Monitoring Requirements, is a general requirement indicating that the District may impose monitoring and/or recordkeeping requirements deemed necessary to ensure compliance with the rule. These requirements are routinely established in the form of permit conditions specified in Regulation 2, Rule 1, Section 403.

#### **4.1.6 Manual of Procedures**

Section 2-5-601: Emission Calculation Procedures specifies emission calculation procedures for new and modified sources. The emissions for new sources represent the maximum emissions from the source considering any limiting permit conditions that are established by the District. The annual emissions for modified sources represent the maximum increase in annual emissions from the source above existing baseline emission levels considering any limiting permit conditions established by the District. The maximum one-hour emissions for modified sources represent the total maximum one-hour emissions from the source after the modification. The use of total one-hour emissions for modified sources (rather than the increase in emissions resulting from the modification) will eliminate the need for establishing short-term baseline emissions while providing additional health protection.

Section 2-5-602: Baseline Emission Calculation Procedures contains procedures for establishing baseline annual emissions for existing sources at the facility which will be modified. Section 2-5-603: Health Risk Screening Analysis Procedures specifies that any HRSA shall be prepared in accordance with the District HRSA Guidelines.

### **4.2 Proposed Amendments to Regulation 2, Rule 1**

The District is proposing amendments to Regulation 2: Permits, Rule 1: General Requirements, to delete obsolete terminology and to ensure consistency between the applicability of permit requirements and the project approval criteria for new and modified sources of toxic air contaminants provided in the new Regulation 2, Rule 5. (The proposed rule amendments are provided in strikeout and underline format in Appendix A).

The TAC trigger level table that appears as Table 2-1-316 will be deleted from Regulation 2, Rule 1 and moved to Regulation 2, Rule 5 as Table 2-5-1. References to the current table appearing in Sections 2-1-106: Limited Exemption, Accelerated Permitting Program, and 2-1-316: New or Modified Sources of Toxic Air Contaminants or Hazardous Air Pollutants, have been updated.

There is one specific reference to the District's RMP in Regulation 2, Rule 1, which appears in Section 2-1-220: Portable Equipment. This reference has been updated to Regulation 2, Rule 5.

The definition of TAC given in Section 2-1-222 has been revised somewhat. The existing definition is limited to those toxic compounds that have been formally adopted

as TACs by CARB or that are listed as HAPs in the federal Clean Air Act. There are a relatively small number of toxic compounds, however, that are regulated under Regulation 2, Rule 5 (listed in Table 2-5-1) but which have not been formally adopted as TACs or listed as HAPs. The revised definition of TAC in Section 2-1-222 includes these compounds.

The term “risk screening analysis” defined in Section 2-1-225 has been renamed “health risk screening analysis (HRSA)” to be consistent with Regulation 2, Rule 5. The definition is also being revised to be the same as that given in Section 2-5-211.

As was mentioned previously, the part of the definition of “modified source” given in subsection 2-1-234.4, which addresses sources that have an increase in one or more pollutants not previously emitted, has been revised. The existing definition is based on emissions “which would cause the source to fail an air toxic screening analysis performed in accordance with the current Air Toxic Risk Screening Procedure.” The revised definition is based on emissions which would cause the source to trigger the TBACT requirements in Regulation 2, Rule 5, Section 301.

Definitions for the terms “BACT/TBACT Workbook” and “Clean Air Act” are provided in Sections 2-1-237 and 2-1-238, respectively. These terms are used in a number of sections in the District’s permit rules.

Sections 2-1-312, 2-1-313 and 2-1-428, which pertain to exemptions from CEQA review, have been revised. Currently, subsection 2-1-312.11.4, indicates that a project for which there is no possibility of any significant non-air quality environmental effects, is exempt from CEQA review if it results in an increase in TAC emissions but “the District staff’s preliminary health risk screening analysis shows that a formal health risk assessment is not required....” The District is proposing to revise this language so that a project of this type would be exempt from CEQA review if it has health risks below the thresholds at which TBACT is required under Section 2-5-301. Section 2-1-313 limits the applicability of the CEQA review exemptions in Section 2-1-312.

Some revisions to subsection 2-1-316.1 are proposed. This subsection establishes permit requirements for sources of TAC emissions that would otherwise qualify for certain permit exemptions. The existing language indicates that permits are required for new or modified sources with TAC emissions above a listed toxic trigger level “unless the owner or operator of the source can demonstrate to the satisfaction of the APCO, within 90 days of request per Regulation 1, Section 441, that the source would pass a risk screening analysis, as defined in Section 2-1-225, performed according to the current Air Toxic Risk Screening Procedure.” The revised language indicates that permit requirements for these sources apply unless the owner or operator can demonstrate that the source will: (1) meet the TBACT requirements of Section 2-5-301 (if applicable), and (2) meet the project risk requirements of 2-5-302 (if applicable). The language has also been revised to clarify that a source is not subject



to this section if it was covered by a valid permit exemption at the time that the construction or modification occurs.

Section 2-1-409: Regulations in Force Govern, has been revised to clarify that TBACT and project risk (2-5-301 and 2-5-302) would also be governing standards for the decision to grant or deny an authority to construct for those applications declared to be complete after July 1, 2005 (effective date of Regulation 2, Rule 5).

Two new subsections are being proposed to Section 2-1-428 to clarify criteria for approval of ministerial permit applications for sources with TAC emissions. Under Subsection 2-1-428.5, one criterion is meeting project risk requirements. Under Subsection 2-1-428.6, ministerial applications must have TBACT determinations based on CARB's BACT/LAER Clearinghouse, the District's BACT/TBACT Handbook, an EPA MACT standard, a CARB ATCM, or a more stringent level.

#### **4.3 Proposed Amendments to Regulation 2, Rule 2**

The District is revising Regulation 2: Permits, Rule 2: New Source Review, Section 2-2-244: Best Available Control Technology for Toxics (TBACT), to add clarity and to be consistent with Section 2-5-205.

#### **4.4 Proposed Amendments to Regulation 2, Rule 9**

Regulation 2: Permits, Rule 9: Interchangeable Emission Reduction Credits, refers to the District's Risk Management Policy in subsections 2-9-301.1.4 and 2-9-304.6. The District is proposing to update these sections by referring to Regulation 2, Rule 5 instead of the Risk Management Policy. (The proposed rule amendments are provided in strikeout and underline format in Appendix A).

#### **4.5 Proposed Amendments to Regulation 3**

The District is proposing amendments to Regulation 3: Fees, to improve clarity and to increase revenue in order to fund increases in District staff resources that will be needed to implement the proposed enhancements in the Air Toxics NSR Program. These proposed amendments have been combined with overall proposed amendments to Regulation 3 for the District's upcoming FY 2005-06. The proposed fee amendments are described in a separate staff report.

#### **4.6 Proposed Amendments to Regulation 8, Rule 34**

Regulation 8: Organic Compounds, Rule 34: Solid Waste Disposal Sites, Aeration of Contaminated Soil and Removal of Underground Storage Tanks, contains an exemption (i.e., Section 8-34-122: Limited Exemption, Permanent Collection and Control System Shutdown) that is based, in part, on the project passing a risk screening analysis performed according to the current Air Toxic Risk Screening Procedures. The District is proposing to update the reference to the appropriate health risk screening analysis procedures for consistency with Regulation 2, Rule 5.

In addition, the District is proposing to clarify that passing a health risk screening analysis, in this instance, means complying with Regulation 2, Rule 5 without triggering TBACT. The permanent shut down of a landfill gas collection and control system at a landfill that is subject to Regulation 8, Rule 34 would constitute a modified source of TAC emissions and would be subject to the RMP (currently) and Regulation 2, Rule 5 (in the future). In either case, a landfill without a landfill gas collection and control system would not comply with TBACT and would only be allowed if the health impacts from the uncontrolled landfill emissions were less than the TBACT trigger levels. (The proposed rule amendments are provided in strikeout and underline format in Appendix A).

#### **4.7 Proposed Amendments to Regulation 8, Rule 40**

Regulation 8: Organic Compounds, Rule 40: Aeration of Contaminated Soil and Removal of Underground Storage Tanks, contains an exemption (i.e., Section 8-40-118: Exemption, Aeration Projects of Limited Impact) that is based in part on project emissions being less than the toxic trigger levels listed in Table 2-1-316. The District is proposing to update this reference to the new Table 2-5-1. (The proposed rule amendments are provided in strikeout and underline format in Appendix A).

#### **4.8 Proposed Amendments to Regulation 8, Rule 47**

Regulation 8: Organic Compounds, Rule 47: Air Stripping and Soil Vapor Extraction Operations, Sections 8-47-401.4 and 8-47-402.1 discuss the circumstances under which a risk analysis must be submitted to the District. The District is proposing to revise these sections for consistency with Regulation 2, Rule 5 by changing the term “risk analysis” to “health risk screening analysis”. (The proposed rule amendments are provided in strikeout and underline format in Appendix A).

#### **4.9 Proposed Amendments to Regulation 11, Rule 16**

Regulation 11: Hazardous Pollutants, Rule 16: Perchloroethylene and Synthetic Solvent Dry Cleaning Operations, contains several unnecessary and obsolete references. The District is proposing to remove or correct these references. Specific proposals are discussed below. (The proposed rule amendments are provided in strikeout and underline format in Appendix A).

Section 11-16-102: Applicability, discusses the circumstances under which dry cleaning installations or modifications would be considered ministerial under CEQA. This discussion is a redundant reference of the requirements for a ministerial permit application in Sections 2-1-311, 2-1-427, and 2-1-428 and is not necessary. This section also cites obsolete sections of the Manual of Procedures (MOP, Volume II, Chapter 6 and Appendix A). The District is proposing to delete these unnecessary references and obsolete citations.

Two sections (Section 11-16-301 and Section 11-16-302.2.1) cite an obsolete section of the Manual of Procedures (MOP, Volume II, Chapter 6, Appendix A) for the

District's Risk Management Policy for Dry Cleaners. The District is proposing to replace these obsolete citations with Section 11-16-605.

Section 11-16-605: Determination of Cancer Risk, cites an obsolete section of the Manual of Procedures (MOP, Volume II, Chapter 6, Appendix A) for the District's Risk Management Policy for Dry Cleaners. The District is proposing to replace this obsolete citation with the term "Health Risk Screening Analysis Guidelines" for consistency with Regulation 2, Rule 5.

#### **4.10 Proposed MOP Section**

The District is proposing to add a new part to the engineering permitting procedures contained in its Manual of Procedures (MOP) to address the Air Toxics NSR Program. This part of the MOP (provided in Appendix A) will contain five sections as follows.

##### **(1) Introduction**

The introduction provides a brief overview of the District Air Toxics NSR Program and the history of its development from the REP and RMP to inclusion in District regulations.

##### **(2) Review Procedures for Sources with TAC Emissions**

This section describes the District's review process for new and modified sources with TAC emissions. A list of steps in the process is provided including establishing permit requirements, estimating TAC emissions, comparison with TAC trigger levels, and completion of an HRSA.

##### **(3) Permit Applications**

This section covers permit application requirements for new and modified sources of TAC emissions. The information that needs to be submitted to the District in order to complete the engineering evaluation of compliance with Air Toxics NSR Program requirements is described in detail.

##### **(4) Regulation 2, Rule 5: New Source Review of TACs.**

This section describes the applicability of Regulation 2, Rule 5, and the primary rule requirements.

##### **(5) Glossary**

A list of acronyms used in the Air Toxics NSR Program is provided.

## 5. Alternative Approaches

The District Air Toxics NSR Program uses a risk-based approach where the maximum incremental health risks from new and modified sources in a project are estimated by an HRSA and compared to project risk limits. Projects that meet these project risk limits are not expected to cause, or contribute significantly to, adverse health effects. Incremental significance criteria are used widely by regulatory agencies to draw boundaries on the scope of regulation. The underlying assumption of this approach is that the burden of further regulation on a project that does not add significantly to health risks yields a gain of trivial value.

A number of other potential approaches exist to evaluate the acceptability of proposed projects with TAC emissions. Two of these alternatives are cumulative impact assessment and the precautionary principle, which are briefly summarized below.

### Cumulative Impact Assessment

Cumulative impact assessment (CIA) is an approach that recognizes that, although certain sources may have insignificant health risks in themselves, the aggregate or accumulation of risks from multiple sources has the potential to become significant. In its broadest sense, CIA is a tremendously difficult technical issue because there are many different risk factors that contribute to an individual's overall health risks, and some are known with much greater certainty than others. For example, the cancer risks resulting from exposure to chemicals in the environment are known with much less certainty than the major known cancer risk factors such as smoking, weight and diet, exercise, and alcohol consumption.

In a much more limited sense, CIA can be used to assess health risks from specific risk factors such as exposure to air contaminants emitted from multiple local sources. Depending on its scope, an urban neighborhood-level CIA addressing local air pollution sources can itself be a difficult technical undertaking due to the diversity and number of sources typically present (e.g., industrial and commercial stationary sources, mobile sources, natural sources, and area-wide sources such as fireplaces and the use of consumer products). These technical difficulties are largely related to incompleteness of data (e.g., spatial and temporal emission patterns) needed to estimate exposures and health risks, and to ascertain source contributions. The District has recently established a new Community Air Risk Evaluation (CARE) Program that includes a limited-scope CIA for a community to be selected.

The two basic tools used for completing a CIA for exposure to air contaminants are monitoring and modeling, both of which have important uses that serve to complement one another. Monitoring is a primary method for determining air pollutant levels, and is less uncertain than modeling particularly when a diversity of sources is present. Air monitoring is costly, however, and is generally based on fixed-site monitoring locations that provide limited spatial resolution. The analytical and predictive capabilities of monitoring also are limited (e.g., in determining source contributions, or estimating the impacts of proposed sources). While the results of

modeling are more uncertain than monitoring, models provide strong predictive and analytical capabilities and can provide results at a wide variety of receptor locations.

The District has, for many years, operated a network of air monitoring sites in the Bay Area where samples of a number of specific TACs are routinely taken. These air monitoring data can be used to estimate exposure levels and health risks over time, and identify spatial variations from one site to another. For example, Figure 1 shows the Bay Area network average lifetime inhalation cancer risk associated with exposure to annual average TAC levels measured from 1994 to 2000. (Note that the dramatic drop in risk occurring between 1995 and 1996 was due primarily to decreases in ambient benzene levels that resulted from the use of Phase 2 Reformulated Gasoline in the Bay Area). Figure 2 shows variations in calculated cancer risks (for the year 2000) for the network average and the four monitoring sites where toxics monitoring data were collected for the largest number of different TACs. (It should be noted that these figures do not include diesel particulate matter which is not directly measured in the ambient air, but is believed to result in average inhalation cancer risks that are about three times higher than the risk attributed to all other measured TACs combined).

The District has previously completed limited-scope dispersion modeling-based CIAs of multiple air pollution sources. One such study was the Cumulative Air Toxics Modeling Study (BAAQMD, 1993), which focused on the maximum cumulative cancer risks associated with emissions from multiple industrial and commercial facilities that had been previously evaluated in facility-wide HRAs completed under the ATHS Program. A total of 54 facilities were evaluated in 12 different study areas. Among the findings of this CIA were that the maximum cancer risks were typically dominated by a single facility's emissions. For example, for the sub areas where cancer risks were estimated to be above 10 in a million, over 90 percent of the maximum cancer risk was attributable to a single facility's emissions, on average.

The District has also completed limited-scope CIAs that focus on common scenarios where multiple facilities may be located in close proximity to one another. One such study evaluated the following: (1) a gasoline dispensing facility scenario consisting of four individual gasoline stations located at the corners of an intersection, (2) a back-up generator scenario consisting of a large number of nearby facilities with diesel engine back-up generators located in urban and suburban settings, and (3) a strip mall scenario consisting of a gasoline station, furniture stripper, dry cleaner, and a facility with a back-up generator, located adjacent to one another in a strip mall. The results of these scenario evaluations indicated that the maximum cumulative health risks from multiple facilities (with equal toxicity-weighted emissions) ranged from 1.4 to 2.2 times higher than the maximum health risks determined from individual facility analysis (e.g., if the maximum cancer risk from each individual facility were 10 in a million, then the maximum cumulative cancer risk from all facilities considered was between 14 and 22 in a million, depending on the scenario).

Figure 1. Lifetime Cancer Risk Due to Inhalation of Network Average Ambient Levels of Toxic Air Contaminants Measured in the Bay Area

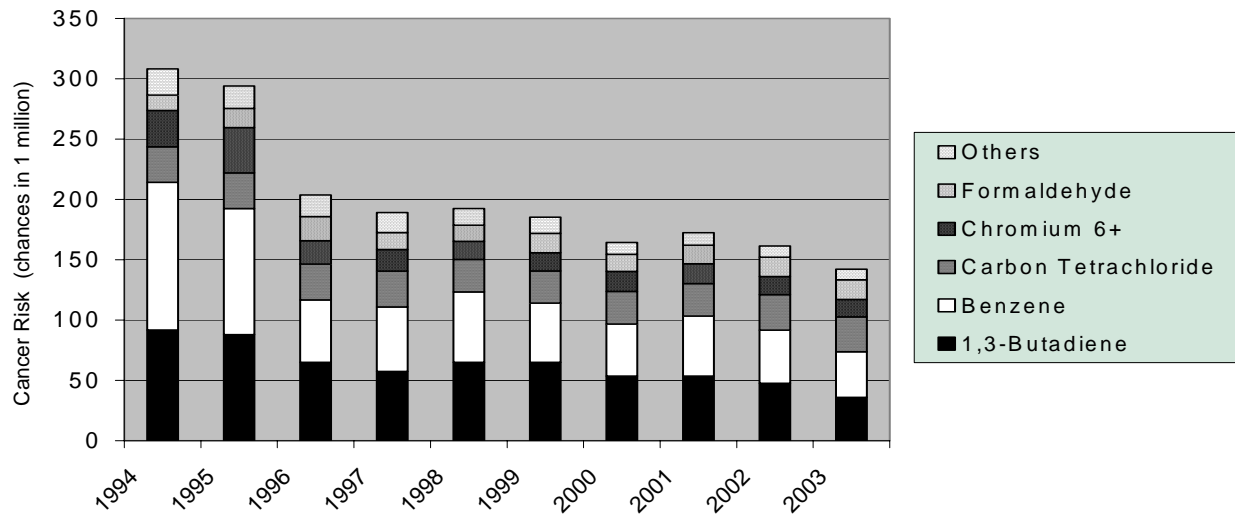
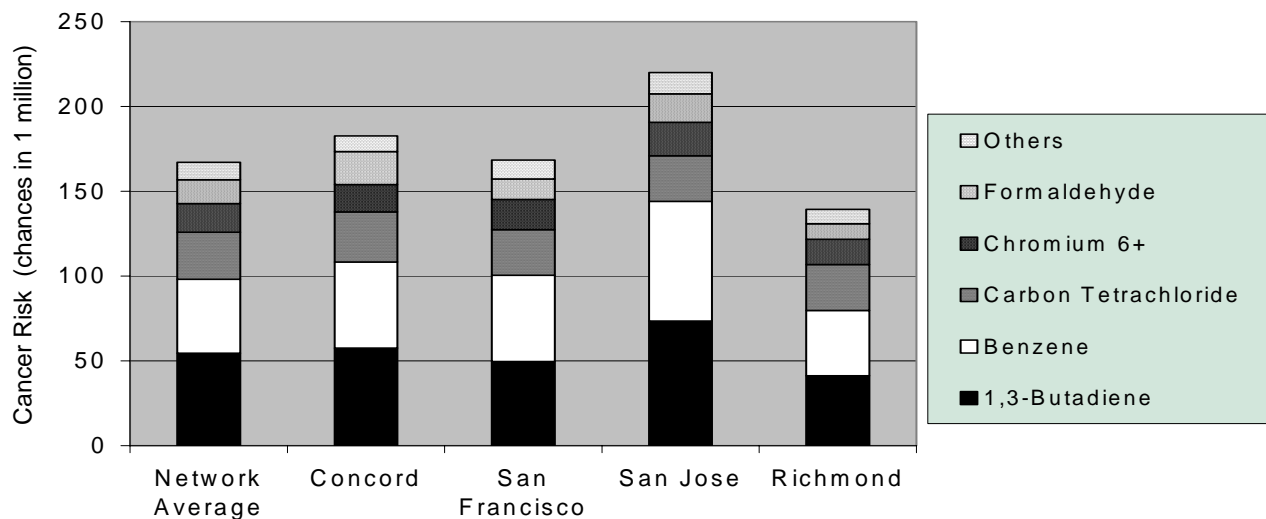


Figure 2. Lifetime Cancer Risk Due to Inhalation of Average Ambient Levels of Toxic Air Contaminants Measured in the Bay Area in 2000



Notes for charts: Cancer risks were calculated assuming continuous 70-year exposure using Unit Risk Factors adopted by OEHHA for use in the Air Toxics Hot Spots Program. Others include: acetaldehyde, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chloroform, dibenzo(a,h)anthracene, dichloromethane, indeno(1,2,3-cd)pyrene, lead, MTBE, nickel, perchloroethylene, and trichloroethylene. Some data used to calculate risk for Richmond were collected at the San Pablo monitoring site. Network average excludes Fort Cronkhite site.

CARB is currently involved, through their Neighborhood Assessment Program, in developing guidelines to support uniform, science-based, assessments of the health risks that result from multiple air emissions sources, including mobile sources, occurring within a neighborhood. CARB has indicated that the results of this type of CIA could be used by local decision-makers to assess policy options for addressing neighborhood-scale environmental concerns.

It should be noted that the completion of a comprehensive CIA using the CARB guidelines will likely require extensive efforts to collect, store, and maintain detailed air dispersion modeling input data. The District intends on evaluating the resource requirements required for their use, and to determine their value in terms of potential improvements to the Air Toxics NSR Program.

In addition to the technical difficulties posed by CIA, there are also policy issues that need to be addressed before CIA can be used in regulatory programs. Criteria for judging the significance of cumulative health risks would have to be established (the significance levels currently used in most regulatory programs are considered appropriate for use in judging incremental health risks at the source, project, or facility level). This includes both defining adverse cumulative health risk thresholds, and establishing the level at which a proposed source, or group of sources, would be considered to have a significant contribution to that adverse impact.

#### Precautionary Principle

The "precautionary principle" has received considerable attention in a number of international discussions on human health and the environment. Although some statements of the principle are more detailed than others, each has at its core the idea that action should be taken to prevent or minimize harm to human health and the environment even if scientific evidence is inconclusive. For example, the 1998 Wingspread Statement on the Precautionary Principle summarizes the principle in the following manner: "When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically." The February 2, 2000, European Commission Communication on the Precautionary Principle indicates: "The precautionary principle applies where scientific evidence is insufficient, inconclusive or uncertain and preliminary scientific evaluation indicates that there are reasonable grounds for concern that the potentially dangerous effects on the environment, human, animal or plant health may be inconsistent with the high level of protection chosen by the EU."

Unfortunately, the precautionary principle does not specify what should trigger action (e.g., how is a potential health threat established, and how is it determined if existing scientific information is inadequate or inconclusive?), nor does it specify what action should be taken after it is triggered. The precautionary principle is therefore difficult to craft into workable policies or regulations. Three common elements generally have emerged, however, regarding the process by which the precautionary principle should

be applied: (1) the process should put the burden of proof on the proponent of an activity, rather than the public, to prove that the activity will not have adverse impacts, (2) the process should involve an examination of the full range of alternatives to the proposed project, and (3) the process must be open, informed and democratic and must include potentially affected parties.

The District believes that many elements of the precautionary principle are built into the proposed Regulation 2, Rule 5. The methods used to estimate health risks are not without uncertainty, but are based on well-established scientific principles, and are intended to err on the side of health protection. The program is designed so that updates in HRA methodology can be used based on improvements in scientific knowledge. (The ATHS program provides a mechanism for the District to address updated HRA information for sources that have already received District permits). The stringent project risk limits are set at levels that the District believes do not warrant more detailed alternatives assessment and public scrutiny within the preconstruction permitting process. The District intends on monitoring any workable applications of the precautionary principle that may emerge and serve to further improve the Air Toxics NSR Program.

## **6. Economic Impacts**

The District must, in some cases, consider the socioeconomic impacts and incremental costs of proposed rules or amendments. These economic impacts are discussed below.

### Socioeconomic Impacts

California CH&SC Section 40728.5 (a) states:

**40728.5. (a)** Whenever a district intends to propose the adoption, amendment, or repeal of a proposed rule or regulation that will significantly affect air quality or emissions limitations, that agency shall, to the extent the data are available, perform an assessment of the socioeconomic impacts of the adoption, amendment, or repeal of the rule or regulation. The district board shall actively consider the socioeconomic impacts, as defined below. This section does not apply to the adoption, amendment, or repeal of any rule or regulation that results in any less restrictive emissions limit if the action does not interfere with the district's adopted plans to attain ambient air quality standards, or does not result in any significant increase in emissions.

The proposed Regulation 2, Rule 5 will apply to new and modified sources of TACs only. This rule may affect air quality or emission limitations for future projects, but it will have no impacts on existing unmodified operations.

The use of the 2003 HRA Guidelines, rather than the 1993 HRA Guidelines, to determine cancer and chronic non-cancer health risks for proposed new and modified sources will affect air quality and emission limitations in some cases. The transition to



use of the 2003 HRA Guidelines is required under the existing REP, however, so that changes in calculated health risks are not a direct effect of the adoption of Regulation 2, Rule 5. (For example, the District has already begun using the updated CPFs and RELs in HRSA, following their adoption by OEHHA over the past several years).

The primary anticipated effect of adopting Regulation 2, Rule 5, is that some future new and modified sources may be subject to more stringent control requirements than would be the case under the existing REP and RMP due to the more stringent TBACT trigger-level for chronic non-cancer health risks, the addition of acute project risk limits, and the elimination of project risk exemptions for Perc dry cleaners. Facilities would also be subject to higher permit fees for permit applications that require an HRSA.

The District believes that this regulatory action, relative to the existing baseline Air Toxics NSR Program under the REP and RMP, is unlikely to result in significant socioeconomic impacts.

#### Incremental Costs

Under CH&SC Section 40920.6, the District is required to perform an incremental cost analysis for a proposed rule, if the purpose of the rule is to meet the requirement for best available retrofit control technology or for a feasible measure pursuant to CH&SC Section 40914. The proposed Regulation 2, Rule 5 and related rule amendments are not best available retrofit control technology requirements or a feasible measure. Therefore, an incremental cost analysis is not required for this regulatory action.

## **7. Environmental Impacts**

The proposed Regulation 2, Rule 5 retains the fundamental approach used in the REP and RMP, but includes several program updates and enhancements that in some cases will result in more stringent air emissions limitations and/or other measures to reduce health risks.

The District prepared a draft Initial Study for the proposed adoption of Regulation 2, Rule 5, and the proposed amendments to Regulation 2, Rule 1, and Regulation 3. Based on this Study, the District made a preliminary decision that the proposed rule and rule amendments will not result in any significant adverse impacts to the environment. Nonetheless, the District decided to prepare a draft Environmental Impact Report (EIR) to more comprehensively evaluate the potential for environmental impacts. The draft EIR indicates that the District's proposal, to require new and modified dry cleaners meet project risk limits of 2-5-302, may result in a potentially significant increase in emissions of a precursor to a criteria air pollutant (ozone) because many dry cleaners may switch from perchloroethylene (a negligibly reactive organic compound) to less toxic cleaning solvents (i.e., VOCs) that may be precursors to ozone formation. Even though the District proposal is expected to

reduce emissions of perchloroethylene and other toxic air contaminants, the potential for this increase in VOC emissions is considered significant under CEQA. No other potentially significant adverse impacts were identified in the EIR.

## **8. District Staff Impacts**

The proposed program updates and enhancements will require additional staff resources due to expected increases in the quantity and complexity of the health risk screening analyses that will need to be conducted and reviewed. The additional staff resources needed for the Air Toxic NSR program is estimated to be between one and two FTEs. The District proposed revisions to Regulation 3 would provide sufficient revenue to cover the costs of these additional staff resources. The amendments will increase the permit fees for permit applications that require an HRSA, and bring the minimum fees more in line with the District costs incurred for completing an HRSA.

## **9. Statutory Findings**

Pursuant to CH&SC Section 40727, adopted or amended rules and regulations must meet findings of necessity, authority, clarity, consistency, non-duplication, and reference. A summary of these findings follows.

- There is need for the proposed rule and rule amendments in order to provide an objective, legally defensible, basis for evaluating whether proposed projects involving new and modified sources with TAC emissions would cause, or contribute significantly to, adverse health effects. The requirements are also needed to satisfy the program objectives established by the District's Board of Directors.
- The proposed rule and rule amendments are authorized by CH&SC Sections 39659, 42300, 42301, 41700, and 42311.
- The requirements of the Air Toxics NSR Program are based on the results of site-specific HRSAs, which are technical analyses that may be difficult for many permit applicants to understand. The applicant is not required to complete an HRSA, however, and the District staff will provide assistance to permit applicants, where the results of an initial HRSA for a proposed project does not meet rule requirements, to identify various permitting options that may be available. The District believes that the proposed rule and rule amendments are written so that their meaning can be easily understood by the persons directly affected by them.
- The proposed rule and rule amendments are in harmony with, and not in conflict with or contradictory to, existing statutes, court decisions, or state and federal regulations.

- The proposed rule and rule amendments do not impose the same requirements as an existing state or federal regulation.
- The proposed rule and rule amendments are intended to interpret and make specific the provisions of CH&SC Sections 42300(a), 42301(b) and 41700, specific to the manner in which the APCO evaluates permits for proposed new and modified sources in terms of compliance with prohibitions on TAC emissions which cause injury to, or which endanger the health of, the public.

CH&SC Section 40727.2 establishes requirements for the District to prepare a written analysis identifying differences between proposed new or amended rules or regulations and any existing air pollution control requirement or guideline applicable to the same equipment or source type.

The proposed rule and rule amendments discussed in this report are general in nature, both in terms of the manner in which the requirements are expressed (e.g., TBACT and project risk limits) and the many different types of sources covered. As such, they do not allow for a detailed comparison of the regulatory elements specified in CH&SC Section 40727.2(d) (i.e., averaging provisions and units of emission limits; operating parameters and work practice requirements; monitoring, reporting and recordkeeping requirements), which are more relevant for making comparisons between source-specific rules.

Comparisons can be made between the proposed Regulation 2, Rule 5, and the federal Clean Air Act Section 112(g) regulation given in 40 CFR Part 63, Subpart B, Sections 63.40 through 63.44. Section 112(g) is a transitional measure that applies to new and reconstructed major sources of HAPs that are in a source category for which a MACT standard has not yet been promulgated. It also applies to major modifications that would increase HAP emissions in quantities that would exceed the major source thresholds (10 tons per year or more of a listed HAP, or 25 tons per year or more of a combination of HAPs, based on potential to emit). Section 112(g) requires that affected sources be subject to stringent air pollution control requirements, referred to as "new source MACT." Under the Clean Air Act, new source MACT control is required to be no less stringent than the best controlled similar source or facility (note that new source MACT and TBACT are considered to be equivalent).

The TBACT requirements in Regulation 2, Rule 5 are not based on exceeding any pre-determined emission thresholds. Rather, the emission thresholds at which TBACT is required are established on a case-by-case basis from the results of a site-specific HRSA for the source being evaluated. In most cases, TBACT will be required under Regulation 2, Rule 5 at emission levels that are significantly below the federal major source thresholds. Exceptions to this include sources that emit HAPs that are not listed in Table 2-5-1, and sources that emit HAPs that are relatively non-toxic and/or which are located in remote areas where public exposure to locally elevated air concentrations would not occur.

## **10. Summary of Rule Development Process**

### **10.1 Public Input**

On May 2, 2004, the District issued an initial draft Air Toxics NSR rule proposal. A series of public workshops were held in May and June of 2003 to discuss this proposal with interested parties. A workshop was held at the District Office, followed by evening workshops at community locations in Richmond, Oakland, San Francisco, and East Palo Alto.

A number of public comments were submitted on the 2003 proposal. The most extensive comments submitted were from the Golden Gate University School of Law Environmental Law and Justice Clinic (ELJC) on behalf of the Environmental Justice Air Quality Coalition, Bayview Hunters Point Community Advocates, and Our Children's Earth Foundation. The California Council for Environmental and Economic Balance (CCEEB) also submitted detailed comments. District staff subsequently met on several occasions with ELJC and their clients, as well as with representatives of CCEEB, in order to clarify and resolve issues.

Further work on the rule was delayed for a period of time pending the release of revised risk assessment guidelines and tools from OEHHA and CARB. On March 16, 2005, the District issued a revised Air Toxics NSR rule proposal. The revised proposal was made in response to public comments and updates in State risk assessment guidelines occurring since the initial proposal was issued. A public workshop to discuss the revised proposal was held on April 8, 2005 at the District Office. Staff subsequently met separately with ELJC and their clients, and with representatives of CCEEB, to further discuss issues. Several changes to the revised proposal were made based on comments received, and a final proposed rule was issued on May 13, 2005.

In January 2005, staff determined that the requirements of CEQA would be most appropriately met for this rule development project by the preparation of an EIR. On January 26, 2005, a Notice of Preparation of a Draft EIR was issued. The Draft EIR was completed on April 18, 2005. The public comment period on the Draft EIR ended on May 23, 2005.

District staff has worked to address a wide variety of public comments submitted, and has incorporated a number of suggested changes into the final rule proposal. A summary of the public comments received in conjunction with the Air Toxics NSR rule development project, and District staff responses to these comments, are included in Appendix E.

## 10.2 Changes from Initial 2003 Proposal

The major differences between the District's final regulatory proposal and the initial 2003 proposal are highlighted below.

- In 2003, the District proposed to clarify and expand discretionary risk management provisions authority found in the existing Risk Management Policy, and to provide new opportunity for public participation in these discretionary decisions. Projects that complied with the specific findings requirements would have been allowed, at the APCO's discretion, to meet facility risk limits of 100 in one million for cancer risk, and 10.0 for acute and chronic hazard indices, instead of the project risk limits of 10.0 in one million for cancer risk and 1.0 for hazard indices. The District has deleted the specific findings exemption, the risk reduction measures requirement, the facility risk limits, and all related definitions, administrative requirements, and procedural provisions from the proposed Regulation 2, Rule 5. Discretionary risk management actions will not be allowed, and all projects will be required to comply with project risk limits of 10.0 in one million for cancer risk, 1.0 for acute hazard index, and 1.0 for chronic hazard index.
- The District has augmented Table 2-5-1 by adding the RELs and CPFs that were used to calculate the Acute and Chronic Trigger Levels. Since 2003, OEHHHA has updated health effects values for several compounds. These revised health effects values and the resulting revised trigger levels (as of January 1, 2005) have been incorporated into Table 2-5-1. In addition, the trigger level calculation procedures have been amended due to OEHHHA's recent adoption of modified breathing rate assumptions into the State risk assessment procedures and due to numerous enhancements of the HARP software that have occurred since 2003. These trigger level calculation modifications resulted in revised trigger levels for many compounds.
- The District also amended Section 2-5-402: Health Risk Screening Analysis Guidelines, by describing how and when Table 2-5-1 and the District's HRSA guidelines will be modified in the future. The District will periodically review, through a rule development process, the feasibility of compliance with project risk limits, for any new or revised health effects values adopted by OEHHHA, or any other revised exposure factors (e.g., breathing rate factors, exposure durations), that affect the emission trigger levels, prior to use of the new or revised health effects values or exposure factors in Regulation 2, Rule 5.
- The District clarified in Section 2-5-301 that the TBACT threshold for chronic hazard index is 0.20 rather than 0.2. In practice, this change reduces the TBACT threshold from a possible high of 0.25 (which rounds down to 0.2 for one significant figure) to 0.205 (which rounds down to 0.20 for two significant figures).
- The District made numerous improvements to the emission calculations procedures in Sections 2-5-601 and 2-5-602 to ensure clarity and consistency.

The Manual of Procedures was revised to clarify that accidental releases were not considered routine or predictable.

- Emissions due to emergency use of emergency standby engines are exempt from the current risk management policy and were proposed for exemption from Regulation 2, Rule 5 in 2003 pursuant to Section 2-5-111. The District is proposing to expand this exemption to include emissions arising from emission testing of these engines that is required by the APCO. This proposed emissions testing exemption for diesel engines is consistent with the ATCM for stationary diesel engines that was recently adopted by CARB. Most new engines are certified by the manufacturer to meet emission standards, therefore testing is very infrequently required by the APCO and these emissions are not expected to be significant.
- The District added definitions for acute hazard quotient and chronic hazard quotient and has clarified the related definitions for hazard index.
- The District revised the definition of cancer risk by removing the quantitative discussion of exposure duration for residential and worker receptors. The appropriate exposure durations will be identified in the District's HRSA Guidelines rather than this definition.
- For the definition of "project" (Section 2-5-216), the District clarified the circumstances under which a previously permitted source will be considered part of the current project. In addition, the District revised Section 2-1-409 and added a new Section 2-5-112 to clarify applicability.
- The District clarified the definitions of "Health Risk Screening Analysis", "modified source of toxic air contaminants", "receptor location", "reference exposure level", and "worker receptor" and made numerous other editorial revisions to the proposed rule.

## **11. Conclusions**

The proposed new rule, associated rule amendments, and new MOP section described in this report are expected to achieve the goals of this rule development project which are to: (1) improve the legal defensibility of the District's permitting decisions concerning new and modified sources of TACs, (2) increase the clarity and public visibility of the Air Toxics NSR Program requirements, and (3) update and enhance the existing Air Toxics NSR Program and increase conformity with updated State health risk assessment and risk management guidelines.

The regulatory proposal is not expected to result in significant economic or environmental impacts. Some additional District staff resources will be needed to implement the proposals, but the necessary funds for these resources will be provided through increases in permit fees for affected facilities. The proposals are believed to

meet the required findings of necessity, authority, clarity, consistency, non-duplication, and reference.

The District conducted a series of workshops to discuss the proposal with interested parties, and has considered all public comments in establishing the final proposal. District staff recommends that the regulatory proposal be adopted with an effective date of July 1, 2005.

## **12. References**

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